AMERICAN AGRICULTURIST.

Designed to improve all Classes interested in Soil Culture.

AGRICULTURE IS THE MOST HEALTHFUL, THE MOST USEFUL, AND THE MOST NOBLE EMPLOYMENT OF MAN—WASHINGTON

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ORANGE JUDD, Proprietor.

February.

"What prodigies can power divine perform
More grand than it produces year by year—
And all in sight of inattentive man.
Familiar with the effect, we slight the cause,
And in the constancy of Nature's course,
The regular return of genial months,
And renovation of a faded world,
See naught to wonder at." COWPER.

There is much not only to wonder at, but to instruct us, in the methods, by which Nature renovates a faded world. By a constant succession of changes the face of the earth is made continually attractive. The rotation, which the Divine mind has impressed upon all the planets of our system, is carried out in all the details of animal and vegetable life, upon the face of the globe. We have a constant succession of seasons, each having its own peculiarities, and preparing the way for its successor, in the circling year. Each month has its strongly marked features, and its appropriate work, by the forces of Nature. The Winter is, by no means, a season lost to the purposes of vegetable growth, though all plants are apparently struck with paralysis, and no changes visible to the eye are going forward. The agencies of frost and water are now active in field and forest, disintegrating both the organic, and the inorganic materials of the soil. The frost breaks down rough hard clods into a finer tilth than the plow and the harrow can ever secure.

In the forest, a constant succession of trees and plants are kept up. However bountifully the walnut may shed its nuts, they are not to reproduce their kind upon the same soil of the parent tree. They will be borne down the stream by the waters, or transported by squirrels to a new locality, to take possession and replace the oak, the chestnut, or some other forest tree. We rarely find an extirpated forest, left to itself, replaced by the same varieties of trees. Hard wood trees are often succeded by pines or firs, and these evergreens are followed by deciduous trees.

The same law of rotation is observed in the smaller plants and grasses.

In the field where wild strawberries flourish in the greatest abundance, after a few years, few if any will be found. The grasses which before were scanty have entirely supplanted them. In salt marshes, the black grass, which is most coveted for food, is gradually driven out by the onion grass, and other coarse varieties. Shut off the sea water, and drain these marshes, and a new order of vegetation starts into being as if by magic. Shore weeds come in, and have their brief day, then mosses, dandelions, dock, and thistles, to be supplanted in their turn by upland grasses, clover, herds, and red top.

ROTATION OF CROPS.

Nature then points the husbandman to a rotation of crops, as one of the necessities of his calling. It was not until about a century ago, that this subject received much attention. If shifts in the crops were made, it was not with any understanding of the philosophy of the change. The fact was forced upon the attention of all, that land continually kept in grass, gradually became barren and unprofitable. Plowing and manuring was a remedy, and hoed crops, either roots or grain, would pay for the labor and manure necessary to fit the land for grass again. Yet there was a reason for this rotation, aside from the benefit of stirring the soil and adding new elements to its fertility. Arthur Young, an eminent English writer upon agriculture, was among the first to point out the advantages of a good succession of crops. He claimed, that whenever very good or very bad husbandry is found on arable land, it is more the result of a right or wrong arrangement of the crops, than of any other circumstance; that no district is well cultivated under bad rotations, while it is extremely rare to find one badly cultivated under such as are good. It is, perhaps, owing as much to his labor, as that of any other one man, that England now has a well defined system of cropping her farms. The given routine for a certain variety of soil is followed with great uniformity, and is rarely departed from, except for the purpose of experiment. The experience of her best farmers has determined this rotation, and it is found to be more profitable than any other arrangement of the crops.

The philosophy of this rotation is explained by two theories. The *first or excretory theory* accounts for the phenomena thus: One crop does better where it follows another, because every plant leaves in the soil certain excretory matters, that are not friendly to other plants of its own species; while they are appropriate food for different plants. Plants seem endowed with something of the same instinct as animals, and avoid their own fœces or the dead matter thrown from their own bark and roots. Until these are decomposed, and removed from the earth by other plants, or by the gradual effects of decomposition, the same crop cannot be advantageously planted in the same soil. Hence in raising bulbous flowers, like the hyacinth which grows in water, there must be a frequent change of the water, in order to remove the excretory matter thrown off from the roots of the plant. This same foul water, however, is found to be a good stimulant to other kinds of plants, and will sometimes make them flourish even better than pure water. It is also a well known fact, that nurserymen find it difficult to make a second crop of young apple trees grow, where they have been grown before. Even with heavy manuring, they find it better policy to take a piece of ground that has been occupied with some other crop. If there are exceptions to the advantage of rotation, as there seems to be, in the case of the onion, and some other garden crops, it is in case of gross feeders, where a great deal of manure is used, which, by its fermentation in the soil, decomposes the excretory matter of the crops of the preceding season. The onion crop is almost always heavily manured, and dressed with ashes, which furnish lime and potash, two powerful alkalies, that act with great rapidity upon all vegetable fiber. So much for this theory.

The *second* theory may be stated thus: Each plant absorbs some essential constituent from the soil, which, in time, becomes exhausted. If, for instance, the wheat plant demands phosphate of lime, and there is but a small quantity in the soil, it fails to be perfectly developed when it cannot find a full supply of this mineral. It must be restored by the application of manure or by a fallow, or the growth of some other crop that does not require much phosphate of lime for its perfect developement. Another example is frequently given of root crops, which usually contain considerable quantities of alkalies. This theory supposes a root crop to exhaust the ready formed alkalies in a soil, and that alkaline manures must be added or a change of crops be made, while a further disentegration of the soil is setting at liberty new supplies of alkalies.

We think there is some truth in both of the theories as above stated, but that neither of them, and especially not the second one, will fully account for the advantages of a rotation.

It is probably the exhaustion of the *organic* or vegetable matters in the soil, more by one crop than by another, that chiefly has to do with the benefit of a change of crops. The main points in these theories were discussed in our manure articles in last volume.

A rotation is not only demanded for the sake of furnishing a new pasture ground for the roots of plants, but to prevent the increase of predatory grubs and insects. The instinct of these wonderful creatures leads them to deposit their eggs where the young, when hatched, will find their

favorite food in readiness. The intelligence of man circumvents this instinct, by changing the crop, and cutting off the supplies of the young grub.

The light lands of England are commonly cultivated under a four or five course system. The four course begins with fallow ground, manured 1st year, turnips fed off; 2d, oats or barley; 3d, grass seed; 4th, wheat. The five course is: turnips; oats or barley; clover; peas; wheat.

On heavy clays the rotation is usually fallow, with manure; wheat; beans; wheat manured; clover; oats or wheat.

While rotation is rigidly adhered to, the variations are considerable, to meet the varieties of soil, and the conditions of the market.

There is, perhaps, no point in good husbandry that calls for the examination of American farmers more urgently than this. It has wrought wonders in England, and there can be little doubt that it would work quite as favorable a change in our own agriculture. It is a common fault with us, to keep our land too long in one crop. Grass, not unfrequently, occupies the same field for eight or ten years, until less than half a ton of hay is cut to the acre.

We have seen large tracts of excellent light land made barren, by cropping with rye in alternate years. The same result follows with wheat and buckwheat. Now is the time for farmers to mature their plans for the coming season, and to enter upon a judicious rotation of crops.

Calendar of Work for the Month.

FARM.

February has been called a month of leisure. There is nothing especially driving, but for the provident farmer, anxious to relieve a more busy season from every possible care, there is plenty of work that may appropriately be done now. The chief employment will be the daily care of stock of all kinds, to see that they are regularly and properly fed, and that nothing is suffered to waste about the buildings. Too many farmers look upon the Winter season as a time when little can be earned, without sufficiently bearing in mind that to husband is to earn. The barn, the workshop, the woodshed, the cellar, the forest or wood pile will admit of a variety of labor in clear or stormy weather. The Southern planter will now be actively at work manuring, plowing and putting in early crops.

Cattle require a large amount of care during this month, both on their own, and their owners' account. They should not fall away in flesh as Spring approaches, nor should a lavish, wasteful method of feeding be pursued, thus exhausting the fodder before grazing time. Use the straw cutter daily, and if there is much coarse feed, a steaming apparatus will be found very valuable. Give extra feed to cows about calving, and allow them plenty of room at night.

Cellars—Watch against frost, keep sweet and clean, sort over fruit and expel or catch rats and mice.

Corn—Note the spoiling bins and shocks at the West, and as far as may be apply a remedy in future. Procure seed early and test its vegetating powers by sprouting samples in the house. The planting season will commence at the far South during the latter part of the month.

Fences—Continue to get out materials, as directed last month. Repair and build new ones where the frost will admit.

Flax and Hemp—Complete dressing any yet unfinished.

Fodder—Cut and steam as much of the coarse as possible, feeding with Indian meal, bran, and cut roots. Use racks in the yard, as figured on page 43, rather than scatter the fodder where it will be trampled by stock. We trust the practice of feeding at distant stack yards has been discarded.

Fowls—See directions of last month, and give cooked potatoes or other vegetables in addition to their grain feed. Select and set eggs during the latter part of the month for early chickens. Read articles on "Poultry raising" page 47.

Grain—If any remains unthreshed, leave it no longer a prey to rats and mice. See that vermin are kept from the granaries, and cattle and sheep from the growing fields. Eating off at this season will be very injurious. Look out early for Spring seed.

Hogs—With a full supply of warm cooked food, give charcoal and salt occasionally, especially to breeding sows. Keep their pens well supplied with manurial agents, and a good bed of straw or leaves.

Horses and Mules—Give grain or carrots with cut feed. See that working horses are well shod, during icy weather. Keep blanketed when not in use, and well bedded at night.

Ice Houses—Watch for the first opportunity to fill with thick clear ice, if not already done. Pack close, filling crevices with broken pieces. All this, *if* you get any ice this Winter. We have seen none to this date (Jan. 23).

Manures—Continue to manufacture and cart to the fields as directed last month. Leave it in large heaps until wanted for use, covering them with muck, loam or soil. Save all the liquids of the yards and stalls by absorbing them with the muck or leaves stored for the purpose. It is to be hoped that the manure is all kept under cover, if it is only a roof of poles thatched with straw or corn buts.

Plowing for the Spring crops of cotton, tobacco, corn and grain will now be going on at the South. Guage the furrows a little deeper than last year, or follow with a subsoil plow.

Potatoes—Sort over for seed. Planting may be done at the South during the latter part of the month.

Sheep—Keep them sheltered from storms and separate from cattle and horses. Feed grain and cut roots with coarse fodder. Let them have free access to a trough of salt, with pure water in the yard.

Sugar Maples—Will require tapping during the middle or latter part of the month in mild latitudes. The particular period must be governed by the season. Provide the necessary troughs or buckets and spouts. Have the boilers arranged and everything in readiness for operation. Read the articles on pages 5 of last number, and 37 and 38 of the present issue.

Tools—Employ the stormy days in putting them in order and making any new ones wanted in the Spring or Summer. Waggons, carts, harnesses and farm gear of all kinds should be looked to. Read the article on "Boys' Tool Chests." page 42.

Turnips and other Roots—Feed daily, giving after, rather than before milking. Use the root cutter to reduce them fine enough for sheep even. See "Carrots for Stock" on page 42.

Wood—If the supply of last year is now exhausted, get up a larger pile this Winter. Improve the sledding at the north, and good wheeling elsewhere to the best advantage while they last. Cut, split and store under cover enough to last till April, at least of next year. There will be economy in it, in more ways than one. Read "Green Wood vs. Dry" on page 42 of the present number.

ORCHARD AND NURSERY.

Where grounds are frozen or covered with snow, little can now be done among the trees, save scraping off moss and rough bark, pruning and clearing the snow from the branches of small trees. In some localities the ground is open and transplanting may be done, lands manured and plowed, nursery trees taken up, packed and sent away.

The comparative leisure of this month will afford a good opportunity to go through both Orchard and Nursery and cleanse old and young trees from moss, rough bark and insects, using soap suds freely, as recommended in the December number of last volume, for the bark louse, and in the present on pages 49 and 51. The moss can readily be washed from the branches of large trees immediately after a rain, by a brush broom tied to a pole. If a little potash or soap be added to the water, so much the better.

Evergreens—Watch closely after damp snows, and shake off what might otherwise break down the branches.

Fruit—Look over that upon shelves removing the decayed.

Grafting the roots of seedlings put in the cellar last Fall may now be done, if you still pursue this questionable method. Read the second Chapter on "Orchard Culture," page 49.

Imported Trees frequently arrive during the present month, and are often badly frozen in moving them from the vessel to their destination. For the treatment of such see page 258, volume xvi.

Insects—Examine for and destroy scale, borers, moth cocoons, and the caterpillars eggs which are now found near the ends of the branches of apple trees.

Manures—Manufacture and collect as recommended under the "Farm." Muck, ashes and lime are valuable for both orchard and nursery.

Pruning—We advise not to prune during this month, notwithstanding it is the time formerly chosen by old farmers. The wounds do not become sufficiently seared over before the sap ascends in the Spring. The tree suffers from the loss of sap, which, from a vital element within, is changed to a poisonous fluid as it runs down the outside of the tree. June and July are preferable months.

Scions—If a full supply is not already secured cut them during the early part of this month. Be sure of the kinds, and having labeled them, bury in dry earth or sand in the cellar.

Snow banks often do much damage as they settle in the nursery. Shovel out the trees which would otherwise be stripped of their branches by the settling drifts.

Stakes and Labels—Make a good stock for a more busy season. A large number of labels will be wanted during the Spring planting, or sales of nursery trees, and they should be made, painted and strung now.

Transplanting may be done at any time during this month where ground is in working order, provided it is not freezing weather. Large trees can be moved where the ground is frozen, by digging up with a large ball of earth adhering to the roots.

KITCHEN AND FRUIT GARDEN.

While the Southern Gardener is now busy preparing his grounds and sowing the early vegetables, setting out fruit trees, or planting from the hot-bed or cold frame, the grounds of the Northerner are frozen or buried beneath the snow banks. In such situations, little can be done save mapping off the garden, collecting manures, procuring bean poles and pea brush, repairing tools, arranging for hot beds, &c.

Cold Frames—Watch and use similar treatment to that described last month. If buried by a deep snow, leave them until the weather is quite mild, when the banks may be shoveled away and an airing given. Protect from frosts by a thick covering of straw or mats at night.

Cuttings of Currants, gooseberries, grapes and quinces, may be made at any time during February, when the wood is not frozen. Wrap in moist moss in the cellar or bury in dry earth in the open ground. Merely burying in a snow drift is sufficient so long as the snow lasts.

Fences may be made or repaired where no frost is in the ground.

Grape Vines should have been trimmed last Fall. If omitted then, prune in the early part of this month.

Hot Beds—Make during the latter part of this month, if very early vegetables are wanted. See full directions with illustrations on page 53.

Manures—Manufacture and collect all that can be obtained. See that a quantity is in preparation for the hot bed.

Prune but little during this month. The grape vines, currant bushes and fruit trees should have been sufficiently trimmed last Summer and Fall. If omitted then do it sparingly now.

Rhubarb—Where no frost is in the ground a few roots may be taken up and put in boxes of earth for forcing in the green or hot house; or the end of a barrel sawed in two may be placed over the roots in the open ground and buried with manure as described last month.

Seeds—Procure early and prove them in the house before trusting the garden with those of uncertain growth.

Tools will soon be wanted. See that good ones are procured. A garden drill will soon pay for itself in the saving of seed and labor, besides sowing more uniformly.

Trees and Vines—Cleanse from moss and insects as recommended under the "Orchard."

Trellises and Arbors—Construct new ones as required and repair the old.

FLOWER GARDEN AND LAWN.

Very little is usually done in these grounds at the north during February, although the remarkably mild weather thus far promises an exception.

Where new grounds are to be laid out in the Spring, plot them off now, or if to be done by a landscape gardener have it done now, arranging walks and beds, locating trees, shrubbery, &c.

Evergreens will need some care to prevent their breaking down by heavy snows, (if we yet have any,) or settling banks. Shake the newly fallen snow from the branches, and shovel out the lower limbs where necessary.

Hot Beds may be made the last of the month, for sowing early annuals.

Labels and Stakes—Prepare during leisure weather for the planting season.

Manures will be wanted in the Spring and may be collected and carted to the grounds now. To every load of stable manure add a load of muck if you can get it.

Pruning of Roses, Honeysuckles, Altheas, &c., may be done during mild weather, if neglected last Fall.

Transplanting deciduous trees and shrubs can also now be done, if the ground and atmosphere are both favorable. Do not expose the roots in freezing weather.

In the Southern States, besides laying out and grading the grounds, trees, shrubs and flowers may properly be set out, beds made and sown with the more hardy annuals, box edging and hedges planted, and other Spring work done.

GREEN HOUSE.

The Winter thus far has been so mild in this latitude, that fire heat has been needed, only occasionally to dry the atmosphere, and maintain a moderate temperature. But keep the furnaces and shutters ready for a "cold term," should such occur.

Where a hot house is dispensed with, or the two thrown together, a greater degree of heat is required and the plants are pushed into growth. We now suppose this house to contain only those plants which it is necessary to shield from frosts and prepare them for the warmer atmosphere of the hot house.

Air is essential even with very little fire heat, else dampness will pervade the house and do much injury.

Bulbous Plants—Take a few of those beginning to start, to the hot house for early bloom. Carry them in at different periods to keep up a succession of flowers.

Carnations may now be layered and cuttings made.

Camellias are mostly in a warmer house. Those in this department will need a moderate watering and the warmest part of the room.

Chrysanthemums are beginning to grow; water sparingly.

Cleanliness is essential. Keep plants dusted, dead leaves picked off, and insects out of the house. Wash the floors and syringe occasionally, ventilating or using fire heat to dry up the moisture.

Cuttings of many half hardy plants such as Geraniums, Fuchsias, Hyacinths and Myrtles may now be put in pots.

Insects—Fumigate with tobacco, wash with soap suds, syringe and hand-pick until the house is entirely free from insects.

Oranges, Lemons, Oleanders and Myrtles—Prune and water sparingly as they begin to push into growth. Remove a portion of the surface soil from the tubs containing them, and replace it with rich earth.

Seeds—Sow a few annuals for early bloom when taken to the hot house or planted in the border of the garden or elsewhere.

Temperature—This must be regulated according to the collection of plants. Where a mere protection from frost is desired, the mercury may range from 35° to 40°. This will only require fire heat in cold weather. Where the hot house is dispensed with, some of the plants in this collection, especially camellias will require 45° to 50° to push them into growth and bloom even.

Water—A little will be needed occasionally but an excess of moisture at this season is very injurious. In damp foggy weather an occasional fire heat will be necessary to dry the atmosphere.

HOT HOUSE & CONSERVATORY.

Maintaining a proper and even temperature during the usually changeable month of February will require much care and none but competent persons should have charge of the heating apparatus. A thermometer should be kept in each room at all times and frequently examined. Inattention to this particular, even for a short time, will often cause serious injury to the finest plants. Cleanliness should be scrupulously observed, removing all decaying leaves and stalks, dusting and washing the plants, sweeping and washing the floors, and removing moss and weeds from the pots.

Air the rooms daily if the weather will admit. Growing plants and a fire heat soon vitiate the atmosphere. Mid-day is the best time to admit fresh air through the upper ventilators. By all means avoid cold drafts or currents.

Azalias are now flowering. Water and syringe more freely. Repot young plants.

Bulbs—Bring a few from the Green House at intervals to keep up a constant bloom. Change the water of those in glasses twice a week.

Carnations—Turn occasionally to keep the flower stalks erect. Water more freely.

Camellias under proper culture, are the pride of the cultivator at this season of full bloom. Water and syringe freely, but avoid wetting flowers which would hasten their decay.

Cinerarias—Treat as last month, shifting to larger pots as they increase in size.

Cuttings of Epacres, Heaths, Fuchsias, and very many other plants may now be made, to increase the Spring stock.

Fuchsias are now pushing into growth and require an increased, though moderate amount of water.

Gloxinias and Achimenes—Pot off young plants and place in warm situations.

Grapes require different treatment according as early or late fruit is wanted, and heat, moisture, and other care must be in accordance, as described at length in the February number of last volume.

Heat must be regulated according to the collections of plants. In some rooms 45° to 50° will be sufficient while in others 60° to 65° will be more suitable, and with a purely tropical collection, 75° to 80° is none too much. The shutters will be required during cold nights and snow storms.

Insects—Tobacco fumes, syringing, cleansing with soap suds, and other washes are the proper antidotes when insects are once established. It is far better to vigilantly prevent their getting a foothold.

Pelargoniums—Watch the approach of the green fly and destroy by fumigation. Water more freely now that they are in a growing state. Cuttings may also be made.

Repotting—Many of the rapid growing plants require larger pots at this season. Shift to those of sufficient size to flower in.

Seeds—Sow a variety of annuals for early blooming, both in the house and open borders.

Verbenas and Petunias—Plants intended to bloom in pots now require a shift to those of a flowering size. The stock may be increased by cuttings and layers.

Water—The colder the weather the more fire is required and a drier atmosphere is the result. The quantity of water must therefore be increased, but an excess avoided. Syringing the walls, dampening the floors and exposing vats or pans of water will assist in maintaining a humid atmosphere. Water should always be exposed to the warm air before giving to the plants. A tank in the house is the proper reservoir to draw from.

Make a Map of the Farm.

Few of our farms are in a finished state. Most of them are more in the raw state that nature left them, and have to be recovered from the consequences of the bad management of their former occupants. They are yet chaotic, and it will take more than six days of labor, to round them into form, to separate land from water, and to turn the waste into a fruitful field. They are yet to be *made* as much as the house that has only its frame-work reared, or the ship that stands on the stocks, with unplanked ribs and beams. Many are waking up to this unfinished state of their farms, and have already begun certain improvements, and have planned certain others, which bide their time.

But the improvement of a particular field is too often undertaken without any reference to the rest of the farm, and a great deal of labor is needless-

ly expended. We have seen one field drained, and its water carried off on to the adjacent field only to make it more wet and valueless than ever. The only way in which farm improvements may be managed with economy, is to regard the farm as a whole, and to make every improvement with reference to a system which shall embrace the whole. A house to suit the occupant, can be built much cheaper at the outset, than to modify the plan and make successive additions, in so many successive years. The architect finds a plan indispensable to his work. The whole work is projected from cellar to garret, the size of every room and its estimated cost put down. The ship builder does not touch a stick of timber, until he has his model completed, and the length and size of every timber in the vessel estimated.

The farm, as it ought to be, is simply a machine for the production of crops, as the ship is a machine for navigating the water. It has to be made out of the materials which nature furnishes, all requiring more or less modification, to adapt them to the purposes of production. It is manifest, then, that the first step of the farmer toward improvement, is to form a clear idea of what he wants in a farm. He is the owner of, say three hundred acres of land, embracing the usual variety of forest, swamp, pasture, and tillage. Some of it is light sandy land, some heavy clay, and another portion is so rocky, that it has never been plowed. The forest of fifty acres, he wishes to retain for fuel, and timber, so that that may be regarded as a fixture. He has determined upon a rotation of crops embracing a six years course. He therefore needs but six large fields to carry on his course of cropping. Deducting ten acres for his farm buildings, lawn, garden, orchard, &c, he has 240 to be cut up into six lots of forty acres each. This is his plan. His farm, as it lies now, is divided into twenty lots, or more, has rocks to be removed, brush pastures to be cleared up, and swamps to drain. This cannot all be done in one year, but in six years, he can do it, and make it pay. So he draws his map of the farm as it is, and determines to begin his improvements upon the lower side, where there is a good outlet for all the water that he wishes to drain off. He finds upon this side of the farm, four or five fields to be thrown into one; a swamp of five acres to be drained; and a swale of three acres with a hard clay subsoil, that must be furnished with tile; and several gravelly knolls that need a coating of clay.

With a map before him, the farmer can project all these improvements, as he sits by the Winter fire. He can calculate very accurately how many rods of new fence will need to be made, how many rods of ditch must be dug, and how many tiles he must order, and about what will be the cost of the whole operation. He can tell, within a fraction, how many loads of clay and muck he will need upon the gravel hills, to cover them an inch thick. His whole pathway of improvement will be clear and luminous, and he will not become discouraged, and leave a thing half done, like a man who is feeling his way in the dark. The assurance that he is on the path of improvement is worth everything to the farmer. There is no good reason why he should not pursue his purposes with as much cheerfulness, and confidence of success, as the house or the ship-builder. Let him map his farm, and go forward in the execution of a plan, resolutely, and patiently, and in due time, he will have a machine for producing crops, admirably adapted to his wants, and to his market.

Thou canst not joke an enemy into a friend; but thou mayst a friend into an enemy.

Reapers and Mowers, &c.

FIELD TRIAL OF IMPLEMENTS BY THE UNITED STATES AGRICULTURAL SOCIETY, JULY, 1857.

To the Editor of the American Agriculturist.

I have received a copy of the Report of the above Field Trial of Harvesters, and as it was considered the most important, or, at least, attracted the most attention, of any yet made in America, with your permission I will offer a few remarks thereon.

All who went into this trial supposed it was to be a fair and honorable one, and that the Report thereof was to be *accurate* and *complete*. Let us see how these just expectations on the part of the public have been fulfilled.

It appears by Table A, page 71, that on the first and most important day's trial, in a *clover* field, the machine awarded the First Prize, *did not work*, while its half brother, and substantially the same kind of machine, *broke*, and *did not cut its lot*. By all that is just, these machines should have then been immediately "*ruled out*." But instead of this, they were permitted to go on; and as the Prize Machine worked "perfectly," according to the "Points" (40), on the second day's trial, among straight and dry timothy grass, &c., it was taken and deemed to have worked perfectly *throughout* the trial, and thus awarded the First Prize!

On the same principle, the very worst machine on the ground might have been set to work to cut a *single foot* of grass, which, by great good luck, having accomplished "perfectly," it should then be adjudged to have worked "perfectly" throughout the seven days' Trial, and receive the First Prize! Would not this be just as fair in the latter case as in the former? I think we may so infer from what the chairman of the Board of Judges, Hon. John Stanton Gould, says, in the following words:

"If a majority of you agree that I have construed the Scale of Points correctly, viz.: that merit in 'Quality of Work' depends on merit in *all* kinds of work, and not on *one* kind of work alone—the awards will stand as in the report."

The above extract alludes, as I suppose, to "Report" in Table H, page 79, in which he gives the First Prize to another machine. See Mr. Gould's letter, page 85.

Suppose on a "Trial" of speed, at an Agricultural Exhibition of road horses, that one of the competitors did not start the first heat, or if so, he broke down after the first few steps and withdrew; and then being permitted the advantage of starting on a second day, on another and more favorable course or track for *his* powers, he should win this second heat; would any man be found so bold and unjust, as to vote him the first prize?

I am told by farmers who have used this famous First Prize machine, that it does not usually work well in clover; it chokes badly, &c. Was this the reason why it was kept from essaying its merits, or rather demerits, on the first day's Trial, at Syracuse? "*Discretion*" was, in this case, perhaps, "the *better part of valor*."

The sub-committees were instructed to report, on no less than sixty-one different "Points." See pages 23, 4, 5, and 6. But many of these "Points" were *entirely disregarded*; others were *imperfectly reported* on; while *important* notes and figures were *defaced* and *obliterated*, and even *lost*; and yet, with all these garblings and shortcomings, the decisions of the prizes are made up with the same bold front as if these Reports had been rendered perfect!

Let us hear what the chairman of the final Report himself, says, on this head. The italics are mine.

"Everything that *calls off* the *attention* of the judges from the working of the machine, is very certain to cause the *omission* of some *material fact* in their note books, and the *continuity* of the *whole chain* of observation is broken by the *absence* of a *single link*." Page 18.

"Blank books and pencils must be provided for the judges, otherwise the minutes will be kept on loose papers, subject to *obliteration* by rubbing, and to *loss*. *Small* as this item of *precaution* may appear, the *whole* of the *objects* of the *trial* may be *frustrated* from the neglect of it." Page 19.

"Interests of *great magnitude*, both to the manufacturer and to the *farmer*, are put at hazard, and all concerned, are *morally bound* to take *every precaution against error*, and *every security* for the *discovery of truth*." Page 19.

"It is obvious that the *greatest care* should be taken on the one hand, to give every opportunity to develop the good points of each machine; and on the other, to *expose everything* that is *wrong*, for the *protection* of the *farmer*." Page 20.

Good and weighty words are the above quotations from the Report under review. Would that they had been *fairly* acted upon. If they had been, in my opinion, the *First Prize* would have gone to a very different machine than that to which it was awarded. I next come to another kind of quotation from the Report before us.

"It is often overlooked, that time as well as force is an element in the consideration of power. A variation of ten pounds in the draft of two machines is looked upon by many as a mere bagatelle. It is not considered that this force is extended throughout every second of time of working. If, then, the two machines work for ten hours, the difference of force is not represented by 10lbs, but by that number multiplied into the number of seconds in ten hours, viz.:—10h x 60m x 60s x 10lbs = 360,000lbs." Page 51.

Now, in accordance with the above calculation, if we look at Table D, page 75, we shall see that the draft of the *First Prize* machine is put down at 418.3lbs., while that of the minimum, Hussey's (and not Burrall's, as stated in the Report, page 49), is noted with side draft 354.4lbs, Difference between the two, in round numbers, 64lbs., equal to 2,304,000lbs. for the day's work. That is to say, the horses in the First Prize machine will have to drag two millions, three hundred and four thousand pounds more, in ten hours (an ordinary day's work), attached to that machine, than if attached to Hussey's machine; and yet we find that in the general "Scale of Points," made up in the final Table, page 87, where 100 Points are the standard of *perfection*, that the First Prize machine gets 61, while unfortunate Mr. Hussey gets nothing—absolutely *nothing!* What an arbitrary Scale of Points. It will require something more than the blind figure of Justice, standing erect and poising the balances in her hand, to reconcile the unsophisticated farmers to such a turning of the scales.

The Committee, in their Report on the First Prize machine, page 44, say, that its "weight, price, and complexity," are a "drawback to its excellence." In this, I have no doubt, that the farmers who pay its high "price," and puzzle their brains over its "complexity," and the poor horses that are doomed to drag this extra two millions, three hundred and four thousand pounds day after day, in the heat of harvest time, will unanimously agree in opinion with the said Committee.

But I must conclude for the present; but, with your good leave, Mr. Editor, I will pursue this subject in a future number, as I have scarcely arrived yet at the threshold of the *merits* of this Report and its decisions. H. L.

Syracuse, January 20, 1858.

What part of a ship is a farmer? The *tiller*, of course.

Maple Sugar Making.

In response to our request last month, we have received a large number of valuable and seasonable communications, all of which we would gladly publish did space allow so much on one topic. We give the following articles, and in our next we will make room for one or two more of those now on hand. Correspondents will please accept our thanks for their valuable favors.

To the Editor of the American Agriculturist.

In response to your solicitation for practical information relative to the making of sugar from the maple I offer my mite. It is well known that Maple Sugar is one of the staple productions of the Western portion of the "Southern Tier" of New-York. It has of course, been a matter of no little interest to our farmers to manufacture in the best manner, both as to quality, and economy, an article of so much importance, and many have promptly adopted the means and appliances which ingenuity has suggested and experience proved worthy. The first premium awarded at the late State Fair, was given for an article made in Allegany County. In offering a statement of the process and implements used, I give those adopted and used by those that are engaged somewhat extensively in sugar making, and who make a very superior article.

In tapping, a $\frac{7}{8}$ or $\frac{3}{4}$ auger bit is used, making the hole $1\frac{1}{2}$ or 2 inches deep. The spout is made of hard wood, four or five inches long, a hole bored with a small bit through its length, and turned in a lathe, one end to fit the hole made by the bit in the tree, and the other with a head, over which the wire loop attached to one edge of the bucket, is slipped and held. The end of the spout is made quite tapering, or "stunt" as it is sometimes termed, so as to fill the hole perfectly tight at its entrance in the bark of the tree. This allows all the sap to pass through the spout, and prevents its escape otherwise. To "freshen" another hole is bored and another spout inserted near the first, so that the same bucket receives the sap from both.

The buckets are usually made of pine, hooped with ash or iron, and sometimes the outside is painted. On one side at the upper edge of the bucket, a wire loop is inserted, just large enough to pass over the end of the spout after it is firmly driven into the tree, by which the bucket is hung. This dispenses with the sheet iron or tin spout, the gouge, and the nail. Many furnish covers to each bucket, which are made from blocks of pine, sawed of the proper length, from which thin pieces are riven with a shingle frow. On one side or edge of these thin pieces a notch is cut, through which, when properly placed on the bucket, the sap drops from the spout. This cover excludes all rain and snow, leaves and bark. When the "Sugar Camp" is inclosed, (and all should be,) and all kinds of stock excluded, the bucket should be hung near the ground, but otherwise, they may be hung out of the reach of sheep and swine, and reasonably from cattle.

The boiling is done in sheet iron pans, made by the tinner, usually of two or three sheets joined by rivets, the sides and ends turned up five inches, a heavy wire around the upper edge in the manner of a dripping pan. Iron loops are rivetted on at proper distances to serve as handles. Three of these pans placed on a well constructed arch, the two back pans placed each its hight higher than the one immediately before it, small fau ets placed in the two rear pans so that the back one may be discharged into the one next forward it, and that into the front one is found to be a great convenience.

A large store tub, placed so that it will stand its whole hight above the upper or back pan, should be provided with a good cover, a good faucet and spout reaching from the tub to the pan. By the faucet and spout the sap may flow from the store tub to the upper pan, and from that to the second, and so to the third or front pan. The supply may be regulated by the faucets in each, so that the flow to all will be regular and sufficient. For gathering, a sled should be provided with a moderate sized tub firmly fastened upon it, which tub should have the upper head placed four or five inches below the upper end. Two 2-inch holes should be bored through this head. In gathering, a team attached to the sled passes along the roads that traverse the camp at proper intervals, the sap is taken from the buckets in pails, and poured on the upper head of the gathering tub, and passes through the holes until the tub is full. It is then drawn to the proper place to be discharged into the store tub. The discharge is through an inch-and-a-fourth hole in the bottom of the gathering tub, by a spout reaching to the top of the store tub. It will be seen that the ground where the "camp" is built, should be uneven, so that the store tub may be placed above the highest pan on the arch, and the gathering tub when standing on the sled ready to discharge may stand a little above the top of the store tub. The discharge from the gathering tub is closed by a long "*plug*" which passes through one of the 2-inch holes in the upper head into the $1\frac{1}{4}$ hole in the bottom. The spout from the gathering tub should be well made, with the end receiving the discharge tightly covered, and a hole through the cover large enough to receive the discharge and not waste. This spout is placed on the sled-runner and easily and firmly secured.

When the season is somewhat advanced, the weather warm, and the buds begin to grow, it is often difficult to make sugar. This difficulty is obviated by putting a spoonful of quick lime in each bucket. The sap again becomes sweet, and the syrup granulates freely and is quite as white and pleasant as ever. In "sugaring off" the syrup is carefully strained into a medium sized cauldron kettle, and carefully reduced until it becomes sugar, some adding milk, or other substances to "cleanse," and others rejecting it entirely. Indeed, when covers are used on the buckets, the gathering and store tubs, the pans well placed on a well constructed arch under cover, and the whole process conducted with the utmost neatness and order, the "cleansing process" is quite unnecessary.

The cost of bucket and spouts is \$12½ to \$15 per hundred, according to materials and workmanship; pans, \$3, to \$5 each, according to size, and quality of materials. Iron bound pine buckets are preferable to tin, and cost much less. The pans made entirely of iron, in the manner described, are far better than those with wood sides, less liable to leak, easier kept clean, sweeter, and more easy to handle. The cost for the same size and quality of iron is not materially more.

With this suit of apparatus, perfect cleanliness may attend the whole process, the sap and syrup are not stained, embittered, nor soured by a combination of sap, rain, snow, bark, leaves, buds, coal, and ashes. An article is readily and economically produced, almost rivaling the snow in whiteness and purity, pleasant to the sight, and exceedingly pleasant to the taste, as I hope you may have the opportunity of testing, when

"Fair handed Spring unbosoms every grace."

S. Scudder.

Randolph, Cattaraugus Co., N. Y. Jan. 2, 1858.

Further on Maple Sugar Making.

To the Editor of the American Agriculturist.

My experience leads me to differ somewhat from your correspondent in the January *Agriculturist*. By using spouts made of pine, with a hole burned through, or sumach with the pith removed, and properly tapered at one end to *fit* the hole, I save the labor of re-tapping or "freshening," for if the sun and air are well excluded from the interior surface it will not dry up or coat over; while tin or iron quarter circles, as recommended by Mr. H., leave the hole open and fully exposed to sun and air. The spout need not be more than three inches long if the buckets are hung up, except in case of using one bucket for two or more spouts, when longer ones will be useful. Pail handles, such as are ordinarily used on tin pails form excellent and very cheap spouts where they can be procured, and they might be turned to order to fit any required bit.

I prefer turned buckets of pine, or still better of cedar, the size of common water pails, fitted with a sheet iron "ear" upon the outside, to hold it to the tree upon whatever is driven into it, for which I recommend a piece of $\frac{1}{4}$ or 3-16 inch wire sharpened at one end. Properly ground, a wire can be driven into a tree without causing the too frequent "bleeding" which often follows where nails are used, and there is no head to catch the ear. This bleeding is not only an eye-sore, but is very injurious to the tree, and lessens the quantity of sap secured. These buckets can be procured, painted and eared ready for use, at any pail factory, at a cost of from 15 to 18 cents each, and are superior to *tin*, in that they will stand much more rough usage and banging about, will last longer, and cost only one third as much.

Pans for boiling should be made of Russia iron bent up six inches *all round*, and stiffened with a $\frac{3}{8}$ inch wire round the top; and wire handles can be affixed to suit. Such pans will not leak, whereas it is nearly impossible to nail or screw the iron bottom to wood sides and have it keep tight—trial has proved this. They cost but a trifle more than those with wooden sides, and it is always cheapest to get a good, reliable article, even at a double price, to say nothing of the vexation and loss of a continual *sizzle* when boiling. The wooden sides do not prevent boiling over; it is the absence of heat upon the sides, and an iron sided pan is safer if possible than one with wooden sides. In addition to this pan arrangement, it will be found highly advantageous to set kettles in the arch between the pans and the chimney, to use the heat which would be otherwise wasted in heating the sap preparatory to putting it into the pans. One who never used this arrangement will be astonished at the amount of time, wood and trouble saved by it; and kettles are not objectionable when the liquid is not allowed to stand in them. I advise setting the kettles higher than the pans, and having a metal faucet or cock inserted in them, and leading over into the pans, to save dipping the hot sap.

Great care should be taken to have the pans set *exactly* level; and in everything remember that "better not done than half done." The supporting bars used by Mr. H., are not necessary where a genuine, whole pan is used.

In building the arch, make a wall two thirds of the distance back from the front, which shall come up within two inches of the pan—if you have a strong draft, bring it up within one inch; but be the draft strong or light, do not fail to build it in old and new arches, for it will pay for itself a hundred times in a single Spring. My fires had a strong draft, and though having never heard of this wall, I built one as an experiment, and am

confident that upon first trial it saved fully one-third of the fuel formerly required. This wall you will find under all steam boilers, and a man would be thought foolish to set a boiler without it; and what is good for a large fire is good also for a small one.

In tapping I choose the north or west side of the tree, for this side will run when the south side will not, and will not cease running so soon in the season and will give more sap; of this latter I am confident. The trees should be tapped about four feet from the ground, with a ½ to ¾ inch bit, and two to three inches deep according to the size of the tree; for it is only the *sap* part of the wood that yields sap, and perforating the heart of the wood is very injurious to the tree, causing decay. Four feet high will be found a very convenient hight (though the roots and limbs will yield liberally), for then in gathering, the bucket need not be removed from the wire, but merely tipped up and the contents collected very easily and rapidly. Also, if the buckets are set on the ground they catch many leaves blown by the wind, which is avoided by tapping high; and notice the fact that *white* sugar or syrup CANNOT be made from sap in which dead leaves have soaked—there is scarcely anything more deleterious.

Let "boxing" *never* be practiced. It is a barbarous and suicidal method, and the man who would do it ought to be yoked up with him who kills bees for their honey, and placed on the dunce's seat along side the old woman who killed the goose to get at the fountain of golden eggs.

If your "bush" is small and compact, the sap can be collected in pails with a "yoke," but if large or scattered, and upon inclined ground, you will save much hard labor by making long spouts or troughs, and lay them in a line, with a tub or barrel at the head, into which you can turn your collection and let it run gradually through a faucet and along the small troughs to the reservoir, while you are gathering more. In my orchard I used three lines of troughs whose aggregate length was about a quarter of a mile, and the amount of back-aches they saved is incalculable. These long troughs can be cheaply got by having a long log sawn into stuff two inches square, and then with a carpenter's plough, a groove one inch wide, and 1½ deep is easily made; widen the groove at the upper end, and lay them in a line as described, and having once used them you will not soon part with them.

When the sap is boiled to "syrup" set it away in tall wooden or glazed earthen jars to "settle;" let it remain two or three days, according to the thickness, perfectly still and undisturbed; then turn it slowly off, leaving the dregs to be mixed with hot sap and again settled till the sweetness is extracted. The clean syrup is then put in a pan, and to every pailful of syrup add a half teacupfull of *new* milk, (a farrow cow's milk will not answer,) stir it well together while cold, and when still, build a slow fire; as it grows hot, a black cloud of scum will rise through the entire mass, which must be removed the moment it boils.

If for cakes or grained sugar, it is done when strings of it cooled on hard snow, or in cold water, will snap off like glass; then remove it from the fire and stir it incessantly till it begins to "grain" when the quicker it is in the plates, the better.

If for "grained" sugar keep on stirring till it is dry, when it will look like fine coffee, or brown sugar, according to the care taken.

For "drained" sugar, take it from the fire, when it will "flake" off largely and freely in dropping from a tin skimmer, and set it away in tubs or *glazed* pots, for use. The purest of this will settle or crystalize, leaving the rest in thinnish molasses, containing nearly all the impurities. In a few months you will find the sides of the tubs coated with these crystals of sugar, all shaped like an oblong house with one side of the roof longer than the other, hard as glass, and of exquisite and almost immaculate purity. These crystals when melted over and re-manufactured, possess a flavor peculiar to themselves, and quite distinct from ordinary maple sugar. Cakes made from these crystals are almost transparent, and are a rare curiosity, well worthy the young people's efforts to make them.

A pint of old cider in a hogshead of sap will prevent it from graining; and sap so doctored can never be got beyond molasses. Also if syrup is allowed to "sour" and become "ropy," it will never cake or grain, but can be made into candy, preserving the true maple flavor.

Excellent vinegar can be made from sap by boiling down one half, and putting it in a clean barrel with gauze or fine wire netting over the bunghole to keep flies and insects out. It will soon ferment and turn to vinegar preferable for some uses to the best cider vinegar. Having written too much already, I will only repeat the injunction that everything *must* be kept in perfect cleanliness if a nice and salable article is desired.

W. G. WRIGHT.

Hornellsville, Steuben Co., N. Y., Jan. 1858.

How to Clarify Maple Sugar.

To the Editor of the American Agriculturist:

In the first place, the buckets should be made of good white pine or some other good clean material, and at the commencement of every sugar season, they should be carefully brushed out, to remove any dust or cobwebs that may have collected, then immersed in boiling water, washed thoroughly with a cloth, and rinsed with cold water. Storage and boiling apparatus should go through a similar operation.

The sap should be strained through woolen cloth and evaporated in sheet iron pans set in such a manner that the fire can only reach the bottom of the pan, and the chimney carried up outside the building so that no smoke or ashes can fall into the sap while boiling. The evaporation must be as soon after gathering as possible. The syrup must be passed through a woolen strainer when as thick as it can be made to run through when cold. "Sugar off" in a pan made for the purpose. I use one made of the best Russia iron, three feet long, a little over two feet wide, and nine inches deep. A little sweet cream may be dropped in occasionally to keep it from boiling over.

When dry enough to retain its form well when taken from the moulds, (which may be known by stirring a little in a saucer till cold,) pour it into an iron or brass kettle and stir till it begins to thicken considerably, and pour it in oblong moulds made of tin, and holding, say five pounds each.

When cold, take out of moulds and lay the glazed surface downward, which will prevent draining until you are ready for this operation. As the weather grows warm, or when ready, place the cakes of sugar on their edges in some convenient vessel to catch and retain the molasses, and if you do not have as nice sugar as can be made by any ordinary process, then I am no judge of the article.

I have tried clarifying with various substances, skimmed milk, saleratus and whites of eggs beaten together, &c., and I am satisfied, that where proper care is taken to keep everything sweet and clean, the sugar is clearer, pleasanter and every way better without than with any such additions.

Nearly all the impurities contained in common maple sugar, are either foreign matters which get in after the sap runs from the tree, or are caused by burning.

I ought, perhaps, to state that the buckets should be taken in immediately at the close of the sugar season, and go through a thorough washing and scalding process again, to remove every particle of sourness, and every other vessel used in the manufacture, should be cleansed immediately and laid away very carefully.

Now Mr. *Agriculturist*, perhaps some of your readers may think there is too much trouble in all this. Well, if they prefer to boil down a solution of ashes, smoke, snow, flies, and sour sap, and then *partly* remove the foreign matter by the use of some clarifier, all I have to say is, their taste differs from mine....Inclosed is a small specimen of the sugar I manufactured by the above process last Spring. [The sample is as white and fine as the usual "Stuart's refined" sold in the market. ED.]

WM. F. BASSETT.

Ashfield, Franklin Co., Mass., Jan. 4th 1858.

Domestic Pigeons.

Now, in mid-Winter, if you have not already got them, is the best time to commence your pigeon stock. They breed less at this time than in the other seasons of the year, and are more easily *wonted* to a new home. If you get old ones, clip one of their wings slightly—not so that they cannot fly from the ground to their boxes—but so that they cannot take a high, nor a long flight. Do not get them *too* young. They should be *fully* grown, and able to fly well, and pick up their own food; otherwise, they will droop and die. A single pair will do; for if they have good accommodations, and enough to eat, you will have a score of them by next Fall; and next year you may count them by the hundred, provided no accident befalls them. Nor, do not be too financial, or nice, about your pigeon-house. You may have a fancy one if you like—merely for the look of the thing—but the pigeons don't care a copper about it. All they want is to be safe, and cosey.

The best place for pigeons is a loft in the gable end of a barn, stable, wagon, or carriage house, or wood shed. Let the floor be tight, with nothing under it; warm, and rat-proof—for rats, minks, and weazels, make sad havock among them when they can get where they are. Let there be few entrances for the birds—one to half a dozen is quite enough—and only large enough for a pigeon to enter, with a shelf both outside, and inside, to light upon, and that on the outside where no cat, or quadruped of any kind can reach it. Let the room inside be altogether; large enough for a man to walk into, through a hinged door, and the sides made up with tiers of boxes six inches inside, by eight inches long, and four to six inches deep. Each pair will select their own, and there lay, and habit, and bring up their young. They are quite as well as in separate close boxes, and it is much more convenient to go in and take the squabs as you want them for the table. Ten or fifteen feet from the ground is high enough for the pigeon-house.

We are going to give the plan and drawings of one sometime this year, in our series of farm buildings, and erections, and shall then have more to say about their treatment—particularly as our young friends, the boys, like to have them about the premises.

A Brief Talk on the new Sugar Cane.

With many hundreds of letters before us marked by the opening Clerks "on sugar cane," still unexamined, we confess to be yet unprepared to say what we intended to offer this month. Owing to our special efforts in introducing seed last year, our office has been a kind of central point to which the mass of reports and notes have chiefly tended. We published the material parts of the first sixty letters received, but these proved to be only the sentinels of a coming army. Suffice it now to say that, for weeks past, every day has brought new confirmation of the belief that the Chinese Sugar cane is adapted to cultivation in the Northern States for the production of sweetening, both syrup and *sugar*. We have seen abundant samples to convince us that sugar has been made, and that it can be made—and we begin to hope, profitably too, when we shall fully understand the conditions and proper modes of manufacture. This is taking stronger ground than we have hitherto dared to do.

Without estimating numerous other coinciding proofs, the experiments of Mr. J. S. Lovering, at Philadelphia, would seem to be conclusive on this point. We have before us a variety of samples of sugar made by him, of various grades, from the coarsest "brown" up to the finest "loaf sugar;" and we are not inclined to dispute the final conclusion arrived at by Mr. Lovering, that:

"With these conditions secured, it is about as easy to make good sugar from the Chinese cane as to make a pot of good mush, and much easier than to make a kettle of good apple-butter."

But, having said thus much, we feel bound to state that, we consider the *present* knowledge of the best process of manufacturing, still too imperfect to warrant farmers in entering largely into the culture of the sugar cane for sugar making the present year. The past season has demonstrated; *first*, that the plant will flourish in our Northern latitudes; *second*, that it is valuable as a forage crop; *third*, that, even with our present imperfect knowledge, it can be used profitably for making syrup in localities remote from market, (see note 12, in Dec. No., Vol. XVI, page 296;) and *fourth*, that it is adapted to the production of crystalized sugar, under proper modes of manufacture.

The experiments of at least one year more, seem to be required to ascertain exactly what are the proper modes of manufacture. We therefore think it wise to wait the developments of this year, before attempting sugar, or even syrup making on a *large* scale as a source of profit.

Our advice to farmers generally, is, that, they should cultivate a small plot the present year, in order to study still further, the character of the plant, its best mode of culture, its feeding properties &c. By next year, there will, we hope, be abundant information to act upon with reference to its further enlarged cultivation.

OUR OWN EXPERIMENTS

the past season have been widely called for. We might sum up the whole by saying, they were, *for special reasons*, unsatisfactory, in some respects, though instructive. But a brief detail.

We planted something over an acre. The cane grew well, but, owing to the season, ripened little seed. It was treated with a variety of manures, but we found very little difference in the results on the plots planted at the same time. Our conclusion was, that it should be treated in all respects, like Indian corn, except in the distances of the seeds.

We commenced preparations for grinding and boiling, and here our mishaps began. First, the "money panic" coming on, we felt bound to give up our entire time and attention to our Publishing Business in the city, so that we had scarcely one hour of daylight to spend in the country.

The "plantation" was two miles from our residence, and we were under the necessity of putting the entire work of cutting, grinding, and boiling, into other hands, with only the occasional supervision of an hour in the evening. Our mill came to hand late and broke down the first hour, which delayed the work a week. Next, the boiling arrangements were found to be too slow, and not of the best kind. The fires were placed in a single close building, and with a damp atmosphere and much rain at the time, the evaporation was found too feeble. The arch around the main boiler was too high, and all the first samples were inevitably scorched. New boilers were prepared with the base only upon the fire, and several lots of beautiful syrup were produced when they had fine dry weather, of which, there was very little. Much time was consumed in sundry experiments, instructive in themselves, and furnishing many valuable hints which will aid us materially in advising others hereafter.

All these matters delayed our operations until it was too late to continue further with hope of profit, and having accomplished our aim, which was soley to *experiment*, the work was suspended. We found ourselves somewhat "out of pocket," but with much instructive knowledge acquired.

With all the drawbacks, with next to no personal supervision, we obtained from less than half an acre, nearly one hundred gallons of syrup, much of it poor, but some of it very good. Some of it has since been crystalized, so that on the whole we have abundant reason to be satisfied with our experiments, believing, as we do, that in any new enterprise, partial failures, at first, often teach more than a chance success.

Management of the Sty.

The fame of the pig as a manure maker is great, but we doubt, if he is half appreciated, even in his forte. He is commonly fed with richer food than other domestic animals, and the manure is found to be stronger than that of any other quadruped. The old method of treating the pig was to let him run upon the common, or in the pasture during the Summer and put him in the pen only two or three months before he was slaughtered. The sty was merely an ample pen, with a poor hovel for his shelter by night. For lack of material to work over, he thrust his snout into the hard soil of his pen, turning it over, and every stone and bone in it, within a foot of the surface. The result perhaps was a cord of well washed manure, to each pig. This method is still popular in many parts of the country.

But our best farmers have a better system of management. The pig is considered in the light of a worker, as well as a gentleman of leisure, and his snout is turned into a farm implement of very great value. As a disintegrator of sods, it excels both the plow and the harrow. The sty is mainly covered, with the exception of a small yard where the animals may have the sun, and take exercise. The covered and the uncovered parts are kept abundantly supplied with muck, or coarse sods, which are reduced to a fine powder in a short time. Sometimes the sty occupies a part of the barn cellar, beneath the stables, and the pigs are made to do the work of composting the stable manure with muck, and loam. It is done in this way much more thoroughly, than it can be done with fork and shovel.

With this class of farmers "pigs in clover" has become a figment of poetry, for the pig never smells their clover fields, though he has plenty of clover and other green succulent fodder in its season. They cannot afford to waste the manure, and to lose their services upon the compost heap. No flesh is wasted in chasing after nuts in the forest, or grass and weeds upon the common. Pigs kept in styes, and furnished with muck, can easily be made to average four hundred pounds of pork, and eight cords of manure, at a year old. If a farmer falls below this standard, he is not living up to his privileges.

Making Deep Wells.

We have very numerous inquiries in regard to the best modes, the machinery, &c., for digging and boring deep wells. The desired information we cannot give, and we shall therefore be under obligations to such persons as may communicate anything on this topic of interest to our readers. We hear, incidentally, that Messrs Dupont, of Louisville, Ky., have sunk an Artesian well in that city nearly 2,000 feet. The Louisville Courier says, that city "has now the deepest well in the world; the next deepest well—1,300 feet—being at Greville, near Paris, France."

Wire Fences—Information still Wanted.

In October last (vol xvi, page 228), we published a call for information, respecting the feasibility of wire fences, best modes of construction, &c. We have received a few responses, but nothing like the number we looked for, considering the importance of the subject; and we are still waiting for further responses before taking up the subject thoroughly. Probably many of those who were best able to give practical information, chanced to be those least accustomed to the use of the pen; while others refrained from discussing the subject, on the supposition that everybody else would write on a topic of so much interest. We again call for further details of experience, on both sides of the question. Any present subscriber disposed to assist in throwing light on the subject, and not having at hand the October number above referred to, will be furnished with a copy very cheerfully, on sending his address to us. We know there is great demand for further information, and we shall use every exertion to supply it.

SUMMER-DAY—NOT SUNDAY—ERROR CORRECTED.—The type-setters made a "wicked blunder" in our last number, page 26. The whole tenor of that and all other articles in this journal, would, we trust, shield us from the suspicion of sanctioning sabbath breaking, even in the slightest degree. But, to avoid even "the appearance of evil" we make the above correction. The faulty word was *written*, Summer-day.

WHAT A DOG!—MR. EDITOR.—I see in the December *Agriculturist*, this item:—One little "garden patch" of ours has been very profitable this season. The snails ate up the cucumbers—the chickens ate up the snails—the neighbor's cats ate up the chickens, and we are now in search of something that will eat up the cats! Can any of our agricultural friends aid us!—Alabama Planter. ....You can inform the Planter that I have a dog that will eat up his cats (and him too) if he will take the trouble to bring them to the dog's yard.

Richard Young.

Rio Grande, Tioga Co., Ohio.

Wanted! An Agricultural School.

No single question has been proposed to us so frequently of late, as: "where shall I find a good Agricultural school, combining the practical with the scientific, to which I can send my sons?" This question has come from various quarters, but chiefly from residents of this city, and its vicinity, and from gentlemen in Virginia and adjacent South Middle States. There are perhaps, fifty or a hundred—perhaps five times as many (there ought to be) who have been engaged in business pursuits in New York city alone, who are now desirous of sending their sons into the country, where they may develop their muscles by out-door labor, learn something at least by daily observation of both the practice and theory of the greatest and noblest industrial pursuit, and at the same time devote more or less attention to the development of the mind by the daily study of the usual branches of education.

There is an increasing interest in this matter now. Perhaps the "financial events" of the past few months may have had some influence in this respect. Perhaps our citizens are waking up to a sense of the fact that our city reared boys are deficient in that muscular vigor which is required to fit them to compete with the annual influx of country bred boys, who are, after all, the class that constitute the real "bone and muscle" of the commercial circles in this and other cities. We have no better evidence of the increased interest in rural matters than in the fact, that we have on our books as subscribers, nearly 3000 merchants in this city alone, with a large number in nearly all the leading cities in the Union. The increase in this respect has been ten-fold within three years.

To the inquiries for an Agricultural School of the right character, we have been unable to give a satisfactory answer. Various attempts have been made to get up State Agricultural Schools and Colleges, but with two or three exceptions these have been so mixed up with politics that little good has resulted, and we have little hopes in that direction. If the secret history of the past efforts in this State (N. Y.) could be written, we fear, as farmers of the Empire State, we should blush at the exposition.

Michigan has succeeded better than any other State thus far, and has now in operation a good State Agricultural College, comparatively free, so far as we have learned, from the contaminating influences of political intrigue and favoritism. Pennsylvania will follow suit by the opening of her Agricultural College during this year.

But aside from these two institutions—which are, unfortunately for the rest of us, neither of them open to pupils beyond their respective States—we can scarcely point to another institution where all the advantages sought after by numerous inquirers, can be realized, viz: extensive daily practice in the field, combined with constant attention to the usual branches of school education.

We offer these observations, not in a fault finding mood, but for the special purpose of calling out information from different sources, in regard to the actual condition and facilities of the various professedly agricultural schools in the country. We shall be happy to publish anything from unprejudiced, uninterested sources of a reliable character—if it comes brief and to the point.

NEW USE FOR CHLOROFORM.—It is reported that in Taunton, Mass., several fat hogs have been stolen by first administering chloroform, and then taking them from the pens, without so much as raising a squeal.

Agricultural Humbug at Washington.

A CALL UPON CONGRESS FOR INVESTIGATION.

We have long considered, and more than once referred to the Agricultural Department of the Patent Office at Washington, as a humbug—an imposition upon the farmers of this country. First—the whole business is tacked on to another department with which it has no legitimate connection. Second, as stated in our last, of some $75,000,000 expended by our Government annually, but $75,000—or *only one dollar in every thousand*—is devoted to promoting the interests of agriculture, even nominally.

But our chief cause of complaint is in the *way the business is managed.* We will here repeat a paragraph from our last No., page 6. In reviewing the Patent Office Report for 1856, we said:

"On the whole, as the upshot of a year's work "in the Agricultural Bureau of the Patent Office, "we cannot say much for the book. Half-a-doz- "en agricultural periodicals that we can name, "give us an annual fund of information, far ex- "ceeding this in value, and reach *ten times* the "number of readers that the book will do, distrib- "uted as it is. The *annual distribution of seeds* "*by the department*, through the members of Con- "gress, by way of the Post-Offices, with few and "far between exceptions, we consider an *arrant* "*humbug.* We have had scores of packages, in "nine cases out of ten only to try and condemn "them, as far as anything *valuable* was concerned. "This practice ought to be discontinued instanter. "It lumbers the mails and frets the people who "get them, with disappointment. If anything "really new and important could be obtained by "the Patent Office, in that line, it would be well "to distribute it among our farmers; *but the* "*purchase of seeds, common and unclean—as many* "*are—if it be made a jobbing affair, for the benefit* "*of a few favorites, instead of a public object, the* "*less of it the better.*"

The last sentence, in italics, has a deeper significance than most of our readers may have supposed. That *impure* and *untrue* seeds have been sent out we presume no one will deny.

That this business is made "*a jobbing affair for the benefit of a few favorites,*" may not be so easily demonstrated simply from the fact that the guilty officials, with the control of the Government machinery, have the facilities for "*covering their tracks*" so effectually as to baffle investigation by *private* individuals.

Hints have from time to time reached us respecting the way seeds have been *purchased* for the Department, but not in such a definite shape as to warrant the responsibility of a personal investigation. These have referred, among other things, to Bills of seeds upon which a discount is said to have been allowed to *relatives* or friends of the government officials making the purchases.

But, passing these for the *present*, we ask attention to the proceedings of the U. S. Agricultural Society at Washington, Jan. 13th, 14th, and 15th. Mr. Wray there showed up some recent acts of a government officer, in an attempt to interfere with his private business. (We wish Mr. Wray had gone back further, and related some of his former experiences, when in consultation with government officials about the sale of seeds, the securing of a patent for his sugar process, &c. We have an inkling that if summoned by the proper authorities as a witness, he could make some revelations not all creditable to our Agricultural Department.)

Our present object is to call upon our Representatives in Congress, who have, or should have, a common sympathy with the farming interests of the country, to look into this matter. Let there be an intelligent committee (not a political one) especially appointed to examine the past transactions of the government Agricultural gentlemen, to whose kind care this great interest has been intrusted. Let the committee investigate the *sources* of the seeds distributed in times past, the *prices* paid for them; and, further, enquire if they have been directly or indirectly "tolled" for the benefit of *relatives* of government officers. One such case at least has been communicated to us. For its truthfulness we cannot vouch, but we can give names and statements.

Let this committee further inquire what has been the ultimate disposition of the seeds—whether they have been equitably distributed, or whether some members of Congress have not sent off by mail, hundreds of parcels of costly seeds, (or those costing much) which have never found their way into the soil. Are there any instances known, where new varieties of grain have gone into the stables of favorite horses of the said members?*

Let them inquire further, what becomes of the Patent Office Reports, printed ostensibly for distribution among farmers. We can point them to two places in this city where they are sold for 37½ cents each, and we have to-day bought them thus, with the offer of *plenty more*, and by the hundred, too, "AS SOON AS THEY COULD BE SENT FOR."

We hold *direct* communication with more than *thirty thousand* of the leading farmers of the country, and indirectly with many more; and on behalf of them and others, we respectfully call upon our Representatives not to pass the matter idly by. We can assure them, in the most positive manner, that there is a deep and growing feeling among the mass of farmers, that the management of the Government Department of Agriculture is little short of an imposition, and that they will not long remain silent.

Our government can and should do much for the promotion of agricultural improvement. This interest is second to none. It should not be, so far as government is concerned, left entirely to the tender mercies of one or two inefficient persons, with *power* to prostitute the good intentions of our representatives to their own selfish ends.

We know, among our Representatives at Washington, more than one noble-hearted man, who is alive to, and deeply interested in our common agriculture; and we can but hope they may be led to take some present action in regard to the subject. We shall have more to say on this topic.

* A case of this kind was related to us a short time since, but we have lost our informant's address. If this meets his eye, will he please communicate with us. Any other facts bearing on the topics of this article we shall be glad to have brought forth.

What Weather!!

Is the almost universal exclamation. Here it is, January 25, and neither snow nor ice—or but a very little yet seen hereabouts. It is worthy to be recorded, that in 1858, up to January 25, green grass has hardly disappeared from the fields, and there has not yet been frost enough in the ground to prevent plowing, trenching, and most kinds of outdoor work, from being carried on with about as much facility as in November or April. Perhaps Winter has gone into a nap for a year; but we suspect he will yet wake up and growl a little, when we least desire his presence. So it will not be amiss to plow a few fields, and spade the garden, if we still have opportunity, and thus be partly prepared for a late Spring, should we have one.

Wonders of the Bee-Hive.

NUMBER VIII.

In our last article on this subject, we gave an illustration that enables us to explain the wonderful fertility of the mother-bee, and the rapid increase of numbers in the early summer. We showed also the appearance of the worm hatched from the egg, as it changes its appearance from day to day. It is while it is in this condition that the *bee-bread* comes into use, being worked over for the food of the helpless worm, and, (as some *suppose*,) mixed with honey and partly digested in the stomach of the working bees. It is considered a settled fact that honey alone is insufficient for the nourishment of the brood; but in the Winter and Spring the bees are often glad to get unbolted *rye-meal* as a substitute for the *pollen* of the flowers, even when their last year's stock is not exhausted.

After the worm has been fed four or five days, and has attained its full size, it is left to undergo another change, and is closely covered up in its cell, like a child left to sleep in its cradle. Fig. 5 gives an enlarged representation of its appearance in the cell, and Fig. 6 shows it prepared to spin its cocoon. It has been a *larva*, it is to become a *nymph* or *pupa*. The cell is covered by the worker bees with a brown substance, somewhat like paper; and as soon as this is done, the larva spins its cocoon, which fits closely to the inside of the cell. After completing this work, for which thirty-six hours are said to be necessary, it gradually undergoes that remarkable change common among insects, which we see when caterpillars become butterflies, and the silk-worm a miller. So this worm is to become a winged bee, in obedience to the law of life, given it by its maker. If the cell is opened after a few days, the *pupa* is found, a white object represented in Fig. 7, in which the different parts of the perfect bee can be traced; and at the end of three weeks from the laying of the egg, the young bee, whose head is always turned to the opening of the cell, may be seen biting away the cover, and at last emerging from its cradle, to take its part in the duties and responsibilities of the hive. It leaves its cocoon behind it, a strong dark colored, paper-like web, which is never removed, and within which successive generations of bees form their cocoons in like manner. When a piece of *old* brood comb is melted, these cocoons retain their form, and may easily be separated from those in adjoining cells.

Fig. 5.

Fig. 6.

Fig. 7.

Our next illustration, Fig. 8, is one that bears a good deal of study, and represents on a reduced scale, some of the most interesting objects in the hive. The greater part of the cells here shown are of the worker size; a few on the lower side at the right hand, are drone cells. A hole at

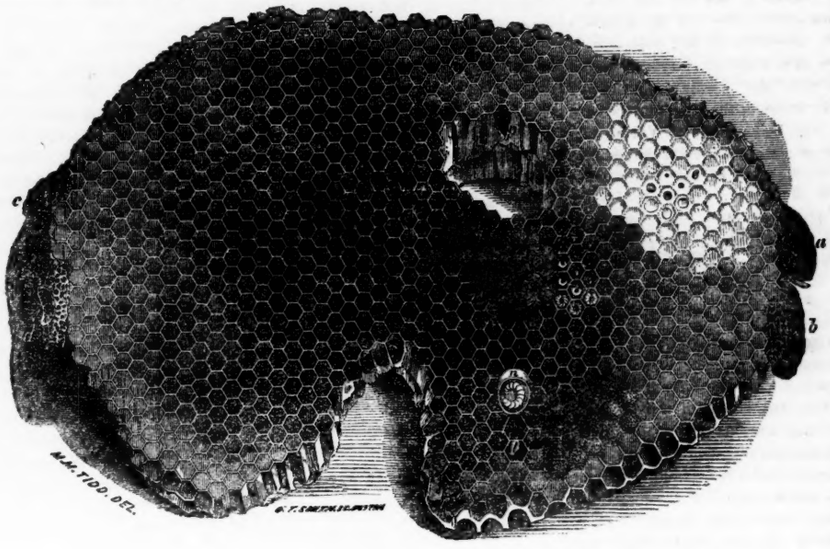


Fig 8.

p shows the thickness of the comb and the depth of the cells on either side. Just below this, at *f*, are brood cells sealed over, from one of which a young bee is just escaping, having succeeded at least in thrusting its jet-black head and antennæ through the cover, while a little to the right, we can see more distinctly the worms, of various ages and sizes. Some of the drone cells below, at *f*, are also sealed over. The honey cells are seen at *e*, some of them full and capped, while others are only partly covered. These are sealed with wax, and have a lighter color than the covering of brood cells. The *form* of the cover is also different. In the brood comb, each cap projects outward, convex in form. In the honey cells there is a slight depression, as if to resist the pressure of the honey.

The engraving represents also the cells in which the queens are reared. They undergo like changes with the other bees, but come to maturity sooner. While the workers require twenty-one days from the egg, and the drones twenty-four, the mother-bee is ready to leave her cell on the sixteenth day. She is reared in an apartment of very different shape from other bees, and is fed with a different kind of food, to which the name of *royal jelly* has been given. In figure 8, *b* is a queen cell in which the inmate is still confined; from *a* the queen has escaped, and the cover of the cell, which opens downwards, instead of horizontally, is seen attached to the side. At *n* we find a cell, not yet complete, in which is a royal worm. The cell at *c* has answered its purpose, and being useless henceforth, the wax has been nibbled away, so that only an acorn cup is left; and at *d*, is represented a cell whose inmate has met with death by violence; for even among so industrious a community as a bee-hive presents, there is sometimes a conflict for the mastery.

Fig. 9.

Fig. 9 shows a queen cell of the natural size, in its ordinary position. Such is their love of order and symmetry, that the workers have laid the foundation of cells around the base, and have dotted the whole exterior, as if they would like to cover it also with hexagons. Indeed, there is a great amount of attention devoted to the cradle of the queen, from the first moment its construction is commenced. It is the constant object of anxiety and almost devotion. Every bee in the hive seems to consider itself a special committee of inspection, for, one after another, in quick succession, they run to it and examine it, inside and out, with the greatest care. They do not apparently commit the work to an "intelligent committee" and take no further thought except to pay a levied tax. In this respect, as well as in many others, our city dwellers—our taxpayers might well imitate the tiny inhabitants of the bee-hive. Their more frequent visits to, and surveillance of our parks and public buildings in course of construction, would ensure not only better work, but more economy in outlay.

Fig. 10.

Fig. 10 shows the position of the queen in the cell, while yet a nymph, and at the top of the engraving—which is the proper base of the cell, may be seen the royal jelly, which is furnished in such abundance that some remains after the queen breaks away from her confinement. These beautiful illustrations give our readers a far better idea than mere words can do, of the inside of a bee-hive, but our facts are not exhausted, and we have yet many more wonders to relate in successive numbers of this present volume of the *Agriculturist*.

Farming and Gold Digging.

We often hear the complaint of ill-luck in farming. Over and over again, we are told that agriculture don't pay for the toil and troubles connected with it. Easily discouraged and discontented young men are leaving their country homes to seek their fortunes in the city, or are roaming away to California to dig for gold. But how few *find* fortunes in the city; or, if found, how uncertain is their possession. The history of the past year is full of striking lessons on this point. Nor is the success of gold-digging much greater. In almost every community you will find families dressed in mourning, over the loss of a son or brother who went to California years ago, in pursuit of fortune, but who, by undue exposure and toil, or the diseases of the climate, or the hand of ruffian violence, was brought to an untimely end. Or if you find one, here and there, who has been more successful, you will also find many who gained nothing, and very many who saved only enough from their hard earnings to buy their passage home. Had those gold-seekers invested

their means in purchasing farms in the West, and expended their time and labor in cultivating the land, would it not have been a better policy? In gold-seeking, one has a bare *chance* of acquiring wealth; in farming he has a *moral certainty* of obtaining an independence for life—and that without the sacrifice of home, health, friends, morals, and all that is most valuable in life. A great ado is made, because the annual yield of the California gold-mines amounts to forty or sixty millions of dollars. A nice little pile, surely; but the hay crop of New York State, or the wheat or the corn crops of Ohio, are no less valuable. Yet no ado is made over these facts. Where are the shoals of discontented young men rushing to the meadows and grain fields of these States? Alas for them! in their blindness they are rushing in every other direction. By and by, perhaps, a good farm, and contentment therewith, will be found one of the best things under the sun.

Dry Wood vs. Green.

Now is the time to secure the annual supply of wood for fuel. Now, the labors of the field are suspended, and men and teams are mostly unemployed. The wet and quaking bog will now bear up the wood chopper and his sled, and heavier loads can be drawn over the roads than in Summer. The cold weather, too, braces up the farmer with a superfluous strength, which makes the severest labor pleasant. Now, then, is the time for gathering this Winter harvest.

We do not mean, however, that the wood now cut, should be used this Winter: let it be secured now, and dried for consumption next Winter. It pains us to see the wasteful and barbarous custom of burning green wood still prevalent in many parts of the country. The very poor man, we suppose, can not lay up a stock before hand; he must buy at market price from month to month, green or dry; but the farmer, at least, is under no such necessity. He can and he should fell his trees in Winter, haul the logs sled-length to his back-yard, and then chop or saw, and split them into stove-wood; and by the time farm work in the field begins to press, his wood should all be neatly stored away under cover.

Yet there are some who look on this as unnecessary trouble: they have always used green wood and got along very well; what need of so much ado in drying and shrivelling up wood before burning it! Oh, plea of laziness! Will such persons please exert themselves enough to look at a few figures, illustrating the *economy* of this thing. A log of unseasoned wood weighing, say one hundred pounds, will weigh, when dry, only sixty-six pounds. What now has it lost? Any combustible matter? anything that will warm your house or cook your food? No: it has lost 34 pounds of *water*. That won't burn very well in a log of wood or anywhere else. Nay, it has got to be *driven out* of the log before the wood will burn. And how must that be done? Solely by a waste of the heat necessary to convert that water into vapor and steam. And where is the economy of this? If about one-third of the weight of green wood is water, then there are 1,443 pounds of water in every cord, which have got to be made into steam before the wood can be burned. Instead of using up our heat in the steam-making business, and so throwing it away, had we not better save it to warm our houses? At least, if there is economy in that business, we are too dull to see it. Will some sharp witted advocate of green wood please enlighten us.

But aside from the question of economy, good, well seasoned wood has much to do with domestic happiness. It is no light matter to be compelled to kindle fires every day and several times a day, with green wood. Especially so in Winter. And the man who provides nothing for his house but green wood, is just the man to lie abed Winter mornings, and compel his wife to make the fires, dress the children, and prepare breakfast before his lordship bestirs himself. A wife must be a miracle of patience, energy and physical endurance to bear such treatment a long while cheerfully. No wonder that such families are often scenes of discord and gloom. No wonder that the wife and mother in such households breaks down prematurely, and that the children grow up rude and lawless, and with no love of home. If matters go wrong in the kitchen, they are quite sure to go wrong elsewhere. Well says an indignant cotemporary: "Green fire-wood should be rejected as the demon of discord in the family; while it smokes, and steams, and sputters, and refuses to toast or roast, or bake or boil, it makes the children sulky and tart, the husband gloomy and severe, and the poor wife anxious and disheartened. Many a scene of domestic felicity has been smoked and sizzled out of existence, by the use of *green fire wood*."

Why use cut feed?

An intelligent farmer asks for the philosophy of cutting hay. He can understand that it is useful to cut corn stalks, and coarse fodder, because the cattle will eat them better. But when cattle will eat up good English hay perfectly clean, why should it be passed through the hay cutter?

Our friend evidently supposes, that the stomach does its work upon everything that passes into it, with equal facility, and without any tax upon the rest of the system. This is manifestly an error. All food has to be ground up before it can be assimilated, and pass into the circulation of the animal. If food is not artificially prepared by cutting, grinding, or steaming, the animal has to prepare it himself, so far as he is able. Certain kinds of food will pass through the system, imparting to it only a part of their nutriment, because the teeth of the animal have not perfectly masticated it. Whole kernels of corn or of oats are frequently seen in the fœces of an old horse.

The more perfectly food can be prepared, the more completely will the system appropriate its nutriment. If the whole labor of grinding up the food is thrown upon the animal it is a serious tax upon the vital energy, which every good farmer wants for other purposes. In the case of the horse and the ox, you want the strength applied to locomotion and to draft. Whatever strength is applied to grinding food, is so much taken away from their capacity for labor. If three or four hours of strong muscular labor are spent in working up hay and straw into a pulp, there is a great loss of strength and of time.

In the case of fattening animals, you want the aliment to go to the formation of fat, and flesh. This process goes on successfully, just as the animal is kept quiet, and comfortable. No useless labor should be expended in the grinding up of food. The straw-cutter, working up the hay into fragments of half an inch in length or less, performs a good part of the work of the jaws, and makes the feeding of the animal a light matter. If the hay could be ground up into a fine meal, it would be still better; as it would make the work of the animal still lighter, and would more completely yield up its nutriment. If it could be steamed it would be best of all as it would then be wholly appropriated.

We have no doubt that it pays quite as well to pass hay through the machine, as the coarsest fodder. A root-cutter is also an indispensable adjunct to the barn, and the more perfectly it comminutes the roots the better.

The farmer who has ever experimented with these machines, and marked the results of feeding with hay, and roots prepared in this way, can have no doubt of their utility. Laziness, we apprehend, has quite as much do with the neglect of these machines as ignorance. It is work to turn the crank to cut up hay enough to feed twenty head of cattle, and in prospect of spending the elbow grease, it is very convenient to believe that it will not pay. Sloth, however, is a poor counsellor in this case, as in all others. We should as soon think of feeding cattle in the open field in this bleak Winter weather, as of feeding them with uncut hay. A warm stable and a straw cutter are both good investments.

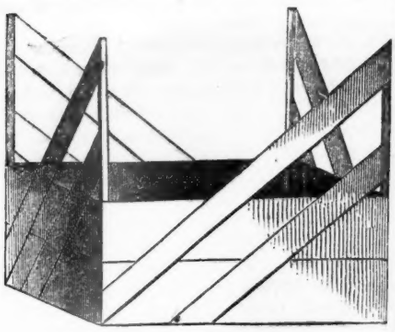
Carrots for Stock.

Can anything be better as Winter food for all kinds of animals, than this familiar root? We have used it for several years with most gratifying results. It is not only useful as a "relish" with other fodder, as apples and vegetables are for mankind in the Winter, but it contains valuable nourishing properties, and may be used as an alternating substitute for other food. We are not surprised to learn that the keepers of livery stables in cities are beginning to use carrots for horse food. They hold that a peck of carrots and a peck of oats are better for a horse than two pecks of oats. All animals require for their health and comfort green food to mix with their dry fodder, and their winter bill of fare is deficient, if it does not include carrots.

We have the report of an experiment made by a careful farmer to test the relative value of several kinds of food for milch cows, with the following general result; three pounds of carrots equal to one pound of hay. This would make three tons of carrots equal to one ton of hay—*i.e., for producing milk*; but for fattening purposes, we should place the carrot nearer upon a par with hay. This also is true of it, that it yields larger crops than the potatoe, is more nutritious, is better adapted to this climate than ruta-baga or turnips, can be more readily and better kept through the winter, and is more easily prepared for feeding, as it does not require boiling or steaming, unless it be for swine. We sometimes meet in our exchanges, with various recipes for coloring Winter-made butter a rich golden hue, like grass-made butter; but we believe the best way to accomplish this is by feeding the cows on good orange carrots, and leave to them the work of coloring the butter.

The Culture is not difficult. Give the ground a liberal manuring with well decomposed dung, and if to this is added a mixture of muck or chip dirt, it will help the matter. Of course the plowing and harrowing must be thoroughly done. Sow in drills two feet apart, if for horse tillage; if done with the hand, at less distance. Sow when the soil is a little moist, and press the earth firmly over the seed.

As carrots germinate slowly, look out for the weeds as soon as they appear, or they will get the start of the carrots and overshadow them. If this seed is drilled in, two pounds to the acre will be sufficient; if sown by the hand, three or four will be needed. Thin the plants at each hoeing, until they are four or five inches apart. By good management, a crop of 500 to 700 bushels to the acre may be expected. The Long Orange is generally considered the best variety; though the White Belgian is very nutritious and is most easily harvested.



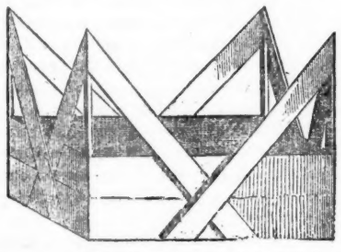
Feeding Racks.

To the Editor of the American Agriculturist.

I forward herewith an imperfect sketch of a Cattle Rack which I think superior to that of T. C., described and illustrated on page 281 of vol. XVI. The advantages of this one are, that the cattle feed at the *corners* where the weaker do not stand in fear of the stronger, as is the case when they feed opposite. The rack is six feet square, with six feet posts. ALFRED DEY.

REMARK.

We thank Mr. Dey for his sketch, which we have filled up and had engraved as above. (We shall be greatly obliged to all who will furnish sketches of various farm and garden or household implements, as well as of plants. We cheerfully pay the expense of engraving anything which will prove instructive or interesting to our readers.) In order to show the two kinds of feeding



racks, we re-introduce in connection with the above, the one before given. We think Mr. Dey's plan an improvement upon this one. There are various other contrivances for feeding cattle in yards, and we shall be glad to have sketches of those in most common and most approved use in different parts of the country. It is an undeniable fact that there is a large amount of waste in the ordinary modes of "foddering" stock. The annual loss of the country at large, in this item alone, must amount to many hundreds of thousands, if not millions of dollars.

WHO IS THE GREENEST!—We have often been not a little amused to see a company of diminutive, pale-faced city striplings, poking fun at country boys "because they were so green." We say amused, for it always makes us think *how* green those same city boys are when they go into the country. We have a good story on this point, about half written out for the *Agriculturist*—it will be finished sometime—we were reminded of it just now by hearing a New-Yorker tell his experience up in New-Hampshire. While riding with a rough farmer, as he called him, he asked him how he would like to go down to New-York; to which the farmer, with words long drawn out, replied: "I s'pose if I went deawn to New-York I should geawk reaund *jest as yeau folks deau up here.*"

American Cattle.

We are going to have a talk about cattle. Some of our readers have written that we were not saying enough about such things of late, thinking, perhaps, we have either little, or no knowledge in that line, or having, declined to publish it. Whether that be so, or not, they will probably find out before we get through. At all events, they may be assured that we have the *will* to say all we can to either interest or instruct on a subject so important to our American agriculture, as the production of *all* classes of *good* farm stock. The past days when immersed in the cares and anxieties of the farm business for weeks together, we have longed at a leisure moment, for some good farming friend—a real judge in such matters—to drop in and have a down-right good cattle talk with us, so much would it raise our spirits, and divert our attention from the monotonous hum-drum occupations on hand; and catching the spirit that then at times animated us, we shall, as occasion serves, in the absence of the uncertain farming friend aforesaid, take a talk on our own hook, with our readers for audience.

THE KINDS OF CATTLE WE NEED.

The wide diversity of soil and climate, in the United States, demands different varieties or breeds of cattle, as may best be suited to them. The rich valleys of our Eastern, the strong soils of the Middle, and the wide tracts of deep alluvian, and secondary deposits of the Western States require, and will sustain a larger, heavier beast than the light and comparatively sterile soils which abound on the Atlantic slope, and are occasionally interspersed among the States West. These comparatively thin soils are better suited to the lighter, and more active breeds, which can graze and fill themselves with less difficulty. Therefore it is necessary for an economical agriculture that the beast be adapted to the soil, and the climate, as well as to the immediate *use* for which it is wanted in the hands of the farmer. And here lies the grand question with the farmer, to *actually know* what he wants in the way of cattle for his own best purposes. Our agriculture has been so miscellaneous since the settlement of the country, and is so miscellaneous now, in its productions upon the same soil, and our farmers are so fitful in their plans and practices, that, excepting in a few sections of the country, there is nothing like a persistent course of farming pursued, and an intelligent system of culture adopted. They have lived in the make-shift way. They have "sheeped" it for a year or two; "dairyed" it awhile; raised grain for a period; laid their land into meadows, and sold hay for a time; raised stock promiscuously, for a few years; dawdled about a little longer; and finally, so far as established results, terminating in a fixed course of farming is concerned—done nothing.

Now, within the most populated districts of the several States, as well as in our new Territories, we have immense tracts of lands naturally suited to all the different branches of agriculture, and portions of them eminently fitted for one branch more than another; while wider portions of soil are adapted to all, or a mixed course of farming. We have the finest sheep walks in the world. We have wide regions capable of keeping the finest dairies. Others fitted for the breeding and growth of young stock. Others again, for grazing, and feeding off cattle for the Shambles—all on a large scale, and capable of employing millions of capital, and a wide spread population more profitably in those occupations than in any other. The appropriation of these lands to their most productive objects requires a *division of labor*—not that their exclusive occupations should be one of the pursuits, which we have indicated, but that it should be mainly of one kind, producing annually, however, other things of immediate necessity for their own consumption which they can cheaply and reasonably do. Even in the restricted Island of Great Britain, which is scarcely larger than the six New-England States—not so large as New-York, New-Jersey and Pennsylvania, combined—they do so. Their agriculture is divided. They have almost entire counties, and in some instances several of them together which confine themselves mostly to one or two staple productions such as we have named; and among them all they combine as wide and profitable a range of agricultural products as the climate and soil will afford, and in greater amount than any like body of land in the universe. The land holders there have long studied their soils, their capacity to produce certain articles of husbandry; and then, with a steady perseverance, kept on with a regular course of cropping, stock rearing, grazing, feeding, or whatever it may be, until they have arrived at as near perfection as the case will admit. In that little Island they have various breeds of cattle, sheep, horses, swine and poultry—all better adapted, as they believe, each in its place, to the particular soil they occupy, than to any other. In this they may, in some instances, be mistaken, and may change their proceeding as they improve and enrich their soils, but in the main, their experience proves them to be correct.

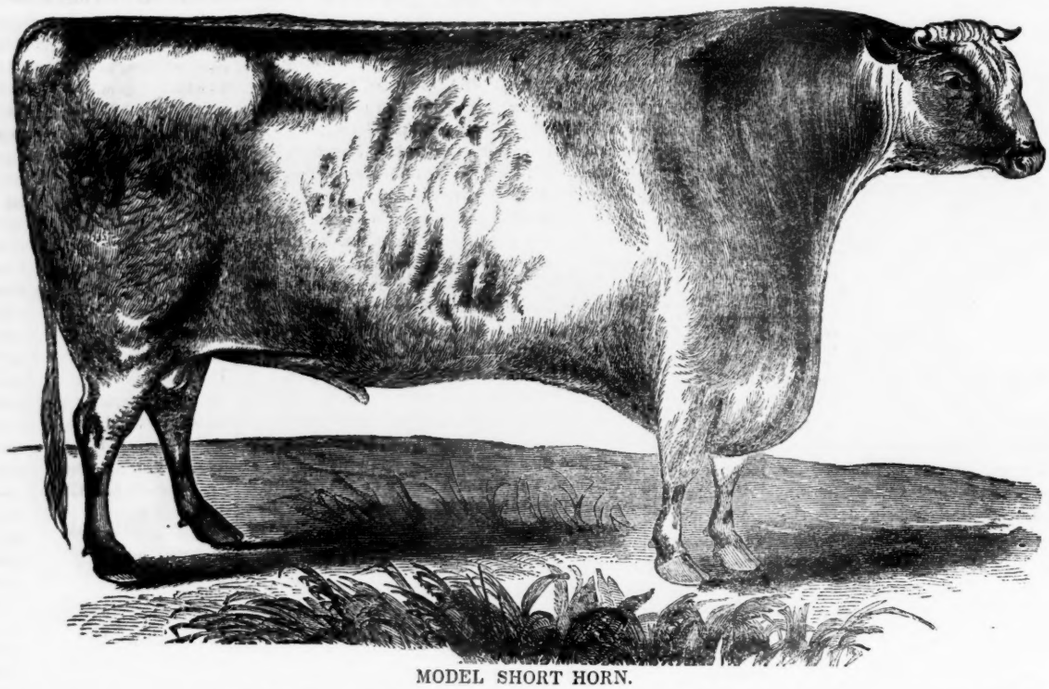
Such being the fact in so narrow a compass as England and Scotland, with how much greater force will the like sub-division of occupation in our agriculture apply to the broad lands, and diversified soils of America. We have been slowly arriving at it in some particular districts, and the tendency of late years has been to extend the system of sub-division in agriculture still further; but it will not be profitably, nor completely done, so far as the breeding and growth of cattle are concerned, until we have thoroughly studied the best breeds to be established in our different climates, and on our different soils. Therefore it is of high importance to examine and determine which are really the best for our different uses; and knowing that, proceed to adopt them.

WHAT ARE OUR COMMON AMERICAN CATTLE?

It is no slander to say, that taken altogether, they are, comparatively, poor things. Brought into the country with its first emigrants, without selection, and as part of the goods and chattels of comparatively poor people, as the early emigrants were, and bred and reared for many generations after they were brought into the country, through poverty and hardship, nothing else than a very ordinary race of cattle could be expected to grow out of them. Yet these cattle answered the purpose, and were probably as good as the rest of the farming of the country. Some of the people, no doubt, improved their stock by good feeding, and a little selection in their breeding animals, but excepting in few and remote instances, until about the beginning of the present century by importations of better breeds from abroad, our native stock remained as they were, a low grade of animals, yet adapted by birth and usage to the extremes and vicissitudes of heat and cold, fullness and hunger, as the circumstances of their owners might govern; that is to say, the cow gave milk, the ox labored, and both made beef—after a fashion.

Things need be so no longer. We now know better. The best breeds of cattle for all purposes from abroad have been introduced among us. They are already made up to our hands in a perfection of physical conformity to their several uses, to such extent that we have nothing to add to them The work is done, and we have only to select

and adopt them as our several wants may determine. Although we may not obtain them in such numbers, nor so cheaply as to stock our farms with those of *pure* breed, yet having the common stock of the country as a basis, we can obtain the better breeds in sufficient numbers to rapidly improve the old stock, and in the course of a few generations, to completely renovate and revolutionize the wretched unprofitable brutes over which we now spend our time, and waste our substance. It is of no use to argue the superiority of the improved breeds of foreign cattle over our own common things. That question has been settled in all intelligent minds, and the only ne to which we need now address ourselves s



MODEL SHORT HORN.

WHAT BREED SHALL WE ADOPT.

That must depend upon circumstances. For a full understanding of this, we shall give a brief description of each; and in the course of that description, the particular properties of the breed will be shown, so that no one may be at a loss to adopt that which will prove both satisfactory and profitable to the condition of his farm and the uses for which they may be required. Rejecting the cattle of Continental Europe as unfitted for he immediate objects we have in view—judging from the specimens which have been brought among us—we take the best breeds of England and Scotland for our models, and will name only:

Short Horns, *Herefords*, and *Devons*, of ENGLAND

Ayrshires and *Galloways*, of SCOTLAND.

Alderneys, *Guernseys*, or *Jerseys*, (called by all these names) of the Channel Islands, dependencies of Britain.

These different breeds comprise all which have been brought into America, of any note, and embrace all which have any acknowledged excellence for economical purposes with us—or in Britain either, excepting the West Highland cattle, of Northern Scotland, which are simply a local breed, in districts where nothing else will thrive.

Each of these oreeds have their own distinct history, given in different English publications, with their predominating qualities, the localities where they have long been kept, and where they have been for many generations past, and still are, favorites, and where they are claimed to be the best possible breeds for the people who retain them. But as we are to apply them to *American* uses, with the limited experience they have had in this country, we shall consider them simply as adapted to our own soils, climates, and localities, so far as we can arrive at conclusions with any certainty, and leave our readers to adopt or discard them, as they may choose. First in order we will take

THE SHORT HORN.

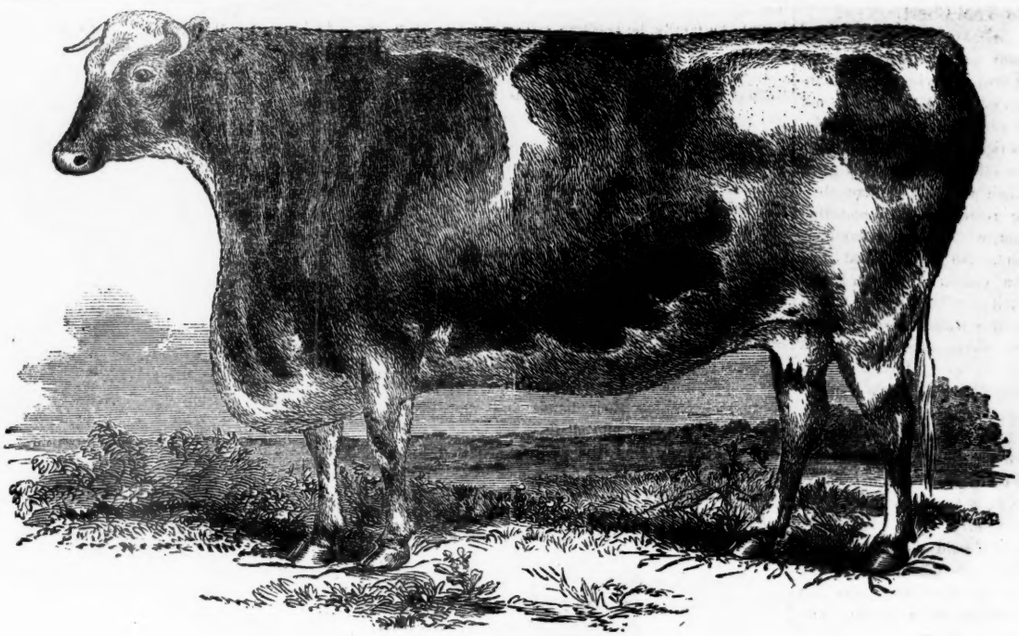
This animal, in its best estate in size, color and appearance, stands peerless among the bovine race. Its history, in England, dates back, by well authenticated testimony, to the fourteenth century. It was, undoubtedly, brought into the North-Eastern Counties of England at a much earlier date—probably before the Norman conquest—from the coast of the neighboring Continent, where a class of cattle retaining many of the prominent characters of the race are still known. What the condition and appearance of the breed were at that early period, it is impossible to say. No doubt they were rude and coarse, compared to what they now are, as were the people themselves, and all their agriculture, of which we have any account. But that these cattle possessed the elements of improvement such as to make, by a long course of care and attention, the magnificent specimens that are now familiar to us, there can be no doubt.

That they are a *pure* breed of cattle, there can be little question. They exhibit characteristics such as no other breed of British cattle possess, and which have never been produced by any sort of admixture of other known breeds. Quacks, and pretenders in cattle history have undertaken to say—and so have written it—that the Short Horns are a *compound* breed, or an artificial race, got up by crossing one breed into another of a widely different kind; but the fact has not been proved, and no other authority than *conjecture* has been given on which to base such opinion. Such as they were originally, (gradually improved by a long course of careful breeding and better practices in feeding and shelter, down to a century ago), we first hear any extended written accounts of them in the North-Eastern Counties of York, Durham and Northumberland, where they had arrived at a high degree of perfection, as yet in the hands of a limited number of breeders. In the latter part of the last century their merits had become so conspicuous in the region where they most abounded that, in the hands of a few of their enterprising breeders, who sent some of the finest specimens over the neighboring counties as a show, they began to attract attention in different parts of the kingdom, and were soon sought by enterprising cattle breeders. They have since been widely and rapidly disseminated throughout not only England, the better agricultural portions of Scotland and Ireland, but are making progress on the Continent, as well as in the British dependencies of Canada and Australia. We, too, have adopted them, to our manifest advantage, where they are probably, for all future time to remain, and become extended, as one of our choice varieties of profitable stock in all sections of the United States *wherever the soil and climate are suited for their production and development.*

As we are not writing a history, or a treatise on the Short Horns, even, but a popular examination of their merits we must refer our readers to the proper authorities for those particulars, and shall next speak of the particular merits and uses of the race. Of these, those who are familiar with, and breed them, need no extended remark; but as we address many who may be unlearned in the subject, we will note their appearance and the chief merits claimed for them.

DESCRIPTION OF SHORT HORNS.

In size they are the largest cattle known. Their shape, when in perfection of growth and condition, is long, round, and full. From the junction of the neck, with the shoulder, back to the tail, the body is nearly an oblong square with the angles rounded off, so complete are their proportions. The head is small, fine and symmetrical; the neck also fine, yet properly proportioned, and gracefully set, with a clean throat, and little or no dewlap; the chest full and round; the brisket low, and prominently projected forward, well covered with flesh; the shoulders wide, and set well forward; the back straight and level; the ribs round, deep and extending well back to the loin; the flanks full, and low; the hips broad, and level; the rump level also back to the tail, where they are wide; the tail on a level with the rump, fine and tapering to its extremity. To these it may be added that the bone throughout is very fine, and the legs no larger than to give sufficient strength and mus-



MODEL SHORT HORN.

In longevity, continuous breeding to an advanced age, and a final profitable termination of her career at the shambles, the Short Horn cow has no superior, and few equals. The bulls are remarkable—when properly treated—for the continuance of their virility, although their American breeders and owners, by a forced growth and pampered condition, while in their prime, in a mistaken estimate of their fine appearance as to condition, too often destroy them as stock getters, at an early age.

We give above a portrait of the cow "Dutchess, by Daisy Bull," bred in the year 1803, by Charles Colling, afterwards the property of the late Mr. Bates, the celebrated Short Horn breeder, of Durham, England, taken also from the third volume of the American Herd Book.

This cow was seven years old when her portrait was taken, just after being dried off from milking; and although in ordinary condition, she presents many of the finest points of a well developed Short Horn cow.

cle to carry the carcase above them. In short, there is the least possible amount of "offal" in a *well bred and thoroughly developed Short Horn.*

OF COLORS,

Short Horns have but two—red and white. Occasionally, they are almost, and in rare instances, fully red. They are oftentimes purely white. But n most cases these two colors, either in patches, one or the other more or less prevailing by themselves in agreeable alternation, or mixed in deeper or lighter roans predominate, giving a beautifill and picturesque effect to the fine contour and imposing size of the animal. A "red roan" is the most fashionable, and the most desirable color of any other, and other points of quality being equal, will command the highest price.

For the gratification of such as would like to see a portrait of the best Short Horn bull in England, half a century ago, we present on the preceding page, that of the celebrated Comet, bred by Charles Colling, and sold by him for one thousand guineas—$5,000—then six years old, at his great and final sale of Short Horns in 1810. The cut we borrowed from the editor of the American Herd Book, in the third volume of which it is represented, and said to be a capital likeness.

At the time of Comet, the Short Horns had been bred up to the highest point of perfection then arrived at in England. They may have been improved somewhat, by a few breeders, since; but as a breed, they have not declined in *good hands*, and in the aggregate, the standard, at this day, is no doubt improved over that of the mass of English Short Horns at the commencement of the present century.

SHORT HORNS AS BEEF.

The two chief merits claimed by the advocates of the Short Horns, are for the production of *beef* and *milk*. Their superiority for beef is claimed in their rapid growth, early maturity, and aptitude for taking on flesh at any age. In these qualities they are not over-rated, let the merits of other breeds be what they may; even in these particulars, the Short Horn, in his rapid preparation for the shambles, has no superior. At three years, to four, in age, with good feed, the steer has arrived at his most profitable condition for market; and although he will grow and improve until his sixth, or even seventh year, taking on flesh to the extreme of obesity, his profitable age is attained at four years. Even at two years they make surprising returns in beef, when the common stock of the country are made up of nothing but bone and muscle, and can not be brought to a profitable carcase of flesh until five or six years of age; and then at far less weight than the Short Horn, to say nothing of the inferior quality of meat, and the larger proportional quantity of offal in the native beast.

SHORT HORNS AS MILKERS.

As a milk, and dairy producing cow, *properly bred, and educated for that object*, the Short Horn has no superior. In England, before they were in so great demand as of late years for breeding and feeding purposes, her feats at the pail were triumphantly set forth by her breeders; but of late years, so much more profitable have been her returns for breeding purposes alone, that the milking quality has been measurably neglected for the greater benefit of obtaining a better calf in the sacrifice of a large portion of her milk. That is to say: If the cow is milked to her utmost capacity in quantity, and time in yielding it, it must be to a considerable extent at the expense of the growth and development of the fœtus, or embryo calf within her: she can not do two things in the best possible manner at one and the same time—give a great yield of milk, and produce the best developed calf together. One or the other must suffer, as the best breeders consider, and the calf being of most consequence, the milk is sacrificed. There are good physiological reasons for this opinion which might be given; but as we are not discussing the science of breeding, it need not now be dwelt upon. But, that the Short Horn has the natural capacity, and when reared and managed for that object, the tendency to produce milk equal to any other breed whatever, there can be no question. Numerous recorded instances in this country as in England, attest that fact. The several volumes of the American Herd Book may be referred to where Short Horn cows have produced thirty to even forty quarts per day, for weeks together, of the richest milk, making a corresponding weight of butter.

AS A WORKING OX,

the merits of the Short Horn have been questioned by many of those who have used them, compared with the best of our native, or common cattle, and those of some other breeds. For continuous and severe labor, our own opinion is that they are *not* equal to some others. We have tried the thorough bred Short Horn for laboring purposes, and although they proved tractable and patient, and did their work satisfactorily, their figure as a breed is not so well adapted to the yoke and the draught as that of a leaner race. Their shoulders are too straight, and too open to bear well against the yoke. They are too slow in action, too heavy in gait, and too short winded for the activity required in the best working cattle. Yet, these deficiencies are disputed by the extreme Short Horn advocates, who give prominent instances of their excellence in the yoke at various labors; but the physical conformation of the animal we think settles the question, when compared with the best working oxen of some other breeds. This quality, however, we consider unimportant in those sections of the country best fitted for the rearing of Short Horns. Oxen are little used in them at all for laboring purposes, and when required, only for such slow movement as a Short Horn can easily encounter in the occasional service for which he is needed. This comparative unfitness for labor, therefore, coupled with the fact that his labor is little in demand where he is most reared, detracts but slightly from his value when measured by the possession of his other superior qualities which we have considered.

We shall continue (in *shorter* articles) further remarks on Short Horns; also descriptions and illustrations of the Herefords, Devons, and the other prominent breeds named above.

The Boy's Tool Chest.

We have known many an excellent mechanic made just from the fact that in boyhood they learned the use of a few joiner's tools. A boy if he be not utterly stupid, takes to using a hammer, and driving a nail as soon as his right hand can lift the one or the left hand hold the other. And as they grow older nothing engages their attention, or fixes their thoughts, when wanting recreation, like pottering about some-thing-or-other, with a saw, a hammer, some nails, and a gimlet. No matter what they make—whether it be a martin or a wren box, a rat-trap, or a hen-coop; it is all the same, so that they make *something*, amuse themselves, and learn the use of tools. In fact, we consider a well furnished tool chest for boys, of as much consequence, and as profitable an investment as we do a set of school books; and a boy, who, at the age of fifteen years, cannot make a good substantial dry good's box to pack his traps in, why—that boy's education has been neglected. We do not confine these remarks to Farmers' boys alone, they apply to everybody's boys—city, village, and country. Nor, where there is a gardener, or farmer, should the little garden tools be omitted. The boys should have the best of tools—and fitted to their own size and strength. We have seen many a bright, ambitious boy driven out of the garden, the field, and the meadow, because he could make no headway with a miserable cast off tool given him, which no one else would use, but "it was good enough for a boy!" We consider it an outrage, as well as injustice of the grossest kind to turn a boy out to labor with a poor tool. If you hire a man, and expect him to do anything, he has got to have *good* tools, and if a man of any spirit, he will not work without them. And so with boys; they should be taught that *their* labor is worth something, and nothing will so readily convince them of the fact, as to furnish them with the best of tools, such as they are.

This is an important subject, although many men and parents do not heed it. Boys are simply miniature men, and their little yearnings and tastes require equal gratification, for they are far more innocent, and easily supplied than those of most men. We have had some experience in this. We have known boys who had a little office or workshop of their own, well furnished with tools, where they would spend their leisure hours, or vacation days from school, happy as need be, when others of like condition, excepting the workshop-men, racketing about the streets full of noise and mischief, or wasting their time in idleness. It needs but little guessing to decide which of these boys grow up the most thoughtful, useful man. A boy's workshop can be fitted up almost anywhere. It is not much used in Winter, the days being short, and the nights appropriated to reading, study, or social intercourse. Any small part of an outbuilding will answer the purpose. But it should be a "workshop" partitioned off by itself, and devoted exclusively to the boys' use, and be *their* property and nobody else's. It should be well lighted; a little workbench in it, a tool chest, nails and hooks upon the walls to hang tools and other things upon, not stowed away in the chest; and complete in all its little traps and furnishings. The whole affair costs but little—not half what a great many men spend in a freak of nonsense, and the boys are made happy. Then, furnish the shop with a little cheap timber, a few nails of various sizes, a paper of tacks, an oil stone to sharpen the tools, and they will soon learn to repair various little things about the house, and larger things about the farm, which in a short time, will save many a dollar paid for a professed mechanic, and at much greater inconvenience. The boy thus finds himself to be an important member of the family; he becomes self-reliant, and soon gains to himself, a character.

In all this we do not propose the workshop and the tools as imposed on the boys as a labor, or a task; but simply as a thing of amusement and recreation. They will take to it as readily as a duck to the water.

But few people we find have a definite idea of the *real* education of boys. Some think the book and the birch—and that all the time—the true method; while others, just the reverse, think boys will come up well enough of themselves. Our notion lies between the two: the book in its due season; the birch, when it is imperatively necessary—and that, not often; play, frolic, and amusement, at stated times, with no period of either, and the workshop where they can go at will, when not at study, and employ their hands and thoughts to some useful purpose, and let their life be as it may, they will surely find the skill so acquired, to be useful.

Blinks From a Lantern.

BY DIOGENES (REDIVIVUS).

In the olden time, when I was a younger man than now, with a lantern I sought diligently for a man among the Greeks. My success, on that occasion, was not remarkable, and the people were accustomed to find fault with me, and called me a cynic, and other hard names, because I did not see in them, all those beauties and excellencies which they thought they saw in themselves. But the public opinion of my character was egregiously wrong, for I was not to blame for seeing what my eyes, with the aid of my lantern, put before me. It could not be fairly expected that I should see with other people's eyes, and clothe them with all those extravagant colors, in which their self-love veiled their deformities. I did very little barking in my day, and if my words bit, teeth, and not words, were the dog's weapons; so that there was no propriety in calling me a cynic, or snappish cur.

I think my lantern might again be of service in the world, and I have concluded to relume its faded taper and go in search of a farmer. "A farmer!" all the wise *acres* will exclaim. "Pray, have we not farmers everywhere in the country? Are not four-fifths of the people of this mighty nation, farmers? and very good ones, too, the backbone and sinews of the country, the intelligent yeomanry.!" That is just what I want to ascertain. If the country is so full of them, a few blinks from my lantern will only make their good deeds shine so that the world can take knowledge of them. If farmers are rather scarce, or nowhere to be found, it is time we waked up to the fact. I shall only report what I see with my own eyes amid the cracks and crannies, where sunlight does not always shine with sufficient distinctness. If the sights I see are painful for the sensibilities of people, they can easily remove the objects of their disgust, and so be rid of the annoyance. I shall be very careful to keep out of all quarrels myself, and if my readers come to blows with the ghosts and hobgoblins, that the lantern scares up, I shall not hold myself responsible for the bad temper, or broken bones that ensue—And first, I will throw the light of my lantern upon

THE LEAKS OF THE FARM.

"Leaks!" exclaim the gentlemen of leisure who amuse themselves upon the farm, and are better acquainted with rhetor*ick* than with *ricks* and their contents" Leaks pertain to ships, and other vessels. Farms do not leak. "Leeks!" exclaim gentlemen of the old school, who have read Moses more faithfully than Liebig." Leeks pertained to the Agriculture of Egypt, but are now a discarded crop. "Leaks!" exclaim the disciples of John Johnson. "What do you want better than leaks. The whole farm ought to be a leaky vessel, with tile drain four feet below the surface to carry of the drippings."

With all due deference to the men of literature and of science, and with suitable veneration for the gentlemen of the old school, who still remain in the Egyptian darkness of the old skinning method of husbandry, I, Diogenes, assert that there are leaks in the farm, that ought to be stopped. With your permission, Mr. Amateur, I will look over your premises with my lantern, and show you some of the leaks.

Here is a fine house, to be sure, Italian style, beautiful lawn, well grown evergreens, nice graveled walks, and carriage drives, an assortment of the best fruits, and a garden that the gods might envy. Diogenes has nothing to say against all these things, if a man is able to own them and take care of them. In a poor man's hands, they would be leaky perhaps. Let us look at the barn, where those beautiful black horses are kept. I do not need a lantern to detect the smell of ammonia, that is constantly steaming up from the stable floors—the floor is indeed cleaned every day, but nothing is put on to save this constant waste. Plaster is cheap, and muck is cheaper; either, would stop a constant leak in your stable. This ammonia is injurious both to the lungs and eyes of the horses, and the dosings to which they are subjected by the disciple of Dr. Dadd, might all be saved, if you would use plaster plentifully. Thus, the stopping of one leak, would stop another, and give your horses much better health.

But when the manure is removed, I see that you throw it out under the eaves in the yard, where it is drenched by the water, evaporated by the sun, and blown away by the winds. The rain induces rapid fermentation, and the manure is very soon fire-fanged, and depreciated in value. You are losing at least twenty dollars per annum on these horses alone by these small leaks. The arangements for your cows and oxen are no better, and there is a dead loss to you, in the single item of manure, of over a hundred dollars per annum. I am unable to say what the length of your purse is, Mr. Amateur, but this leak, where money is dropping out in dollars, eagles, and double eagles, is not beneath the attention of a rich man, if he means to keep his vessel afloat. It is the advice of Diogenes, that you pay less attention to his rhetorical figures, and more attention to your manure.

Put a cellar under your barn, and sheds around the yard, where muck and manure can be sheltered, and where you can exercise your skill in making composts. There is a great leak in your establishment.

And now, my friend, that regards leaks as antiquated, let us look at *your* premises. Your house is very plain, and snug, and your barn altogether too narrow for your stock. You boast of your economy, pay as you go, and have nothing but what you can afford. It is a zero night, and

the blink of my lantern falls on your cattle, in the open field, under the lee of a stack yard. They shiver on the frozen earth, the bleak wind carrying off the heat, faster than they can generate it by the largest consumption of food they can make. Every muscle quivers, every bone shakes under the penetrating blast. And you, good easy man, are by your cheerful fire reading Moses and Solomon, and thanking God for protection from the inclement season. Does not Solomon say that "a righteous man regardeth the life of his beast." And yet you do not care a fig for Solomon in your treatment of your dumb cattle.

But this miserable custom is as wasteful as it is cruel. Hay is a part of the farmer's wealth, and it becomes him to use it, in the most economical manner. The cattle, fed under the open skies during the Winter, will consume full a third more than they would in a comfortable stable. Here, then, is a leak of ten or twelve dollars per annum for every animal so cruelly treated. Besides this, a large part of the manure is wasted, making nearly as much more to be added to the leaks of your farm. This, certainly, is not very thrifty, for a gentleman of the old school, who lives in a plain house, pays as he goes, and never has anything, but what he can afford! If you can afford to throw away twenty dollars of the profit, that every good farmer ought to make on a cow, you are a much richer man than you pass for. Diogenes cannot afford such prodigal waste.

He would recommend to you, and to all other extravagant farmers, to stop the leaks.

Poultry—The Chittagong Crossed with Dorkings—The Diseased Fowls of Rock Island, Ill.—Young Turkeys.

To the Editor of the American Agriculturist:

I was much pleased to find in the last number of your excellent paper several articles upon poultry. Farmers have been humbugged so much by different kinds of fowls, many of them worthless, that they do not give that attention that they should to this kind of stock which can, I think, be made more profitable than any other.

Having had much experience in the poultry line, I can not wholly agree with your Rhinebeck correspondent. There are, as you know, several kinds of brown Shanghais, besides the black and the grey or more properly named Chittagong. Some of the brown Shanghais are good if carefully bred, but the Chittagong (grey Shanghais) I think the best *pure blooded* fowl for the farmers. I have known cocks of this kind to weigh ten lbs. at seven months old. Their flesh is much better than the other kinds; they are better layers (one hen of this breed layed 152 eggs in 155 days); their eggs are as large as the Shanghais; and they are smaller eaters than the common dunghill fowl.

Yet after all, I think a cross of the pure blooded Chittagong and the pure blooded White Dorkings (say the kind imported by Dr. Wight of Mass.) is the most profitable fowl for the farmer. The Dorkings being a very full breasted fowl supply a deficiency in the other kind, making a much better proportioned fowl and coming to maturity sooner, which renders them more profitable for marketing early chickens. The Dorkings being profuse layers do not injure the other breed by the cross.

With regard to the Rock Island chickens, I think they must have had access to salt. This will dry up the crop and prevent their eating. They droop, lose all strength in their legs, and finally die, if not cured. The best remedy for this that I know of, is boiled milk, sweetened, forced down their throats, this will soften the crop and restore life. E. D.

FROM ANOTHER CORRESPONDENT.

Jas. C. Jackson, of New-Castle Co., Del., writes: "Your Rock-Island correspondent may save his chickens by grinding his corn coarsely, or rather by breaking the kernels into only five or six pieces each. At least such is our experience. Two years since, we lost a large number of fowls by just such a disease as he describes, and we have since fed with the corn prepared as above, with good results."

ANOTHER.

A subscriber at Bridgeport, writes, that he had a fowl similarly affected to those at Rock-Island; and that a friend visiting with them, suggested that there was an extra coating upon the tongue which kept the chicken from eating. On examination this was found to be the case; the coating or skin was removed, and the chicken recovered immediately.

AND ANOTHER.

A young subscriber 15 years of age, residing at Davenport township, Iowa—just over the Mississippi river from Rock Island, Illinois—who says he has been chief of the poultry department since seven years of age, writes: I would recommend Rock Islander to mix black pepper (how much,) with corn meal and feed his chickens when they show signs of the disease he mentions. He may be obliged to force them to eat it, but once feeding greatly revives them, so that they will eat readily afterward. Always keep fine gravel for them to use, and a bed of ashes with a little lime in the coop for them to wallow in. Let the hen and chickens out about an hour every evening, after they once become habited to the coop, and you will find your chickens will do better for it. They should be fed fresh meat chopped up fine once or twice a week, or, which is as good, worms, which can be always found in the barn yard by spading up the ground. After they have attained the age of three weeks they should be turned out of their coop, at least one half of the day.

I have had among chickens a great deal of the disease referred to, and have found the above treatment to be the best remedy. I have sometimes wet my meal in a solution of Epsom salts and given it to them, which has a similar effect to the pepper; but not so good. You confine poultry so they cannot run at large, and they will soon show symptoms of the disease. I have often noticed in market stands where they keep those for sale which have been cooped up two or three weeks, that they contract disease and get very poor, although they have plenty of grain and drink; it is for want of gravel to use, in their coops, for when they have no gravel they lose all relish for food of any kind. DAVENPORT.

MORE OF THEM,

We have any quantity of other letters on the same topic, but beyond the above, first at hand, we cannot make room for more on this topic now, save for the one following.

To the Editor of the American Agriculturist:

The difficulties which have beset your Rock Island correspondent, in poultry raising, might probably be overcome, if he would feed his chickens for a few weeks with *sour milk*, with which he might mix wheat bread crumbs or wheat meal. *Raw* Indian meal is not suitable for chickens; it is a fruitful cause of pip and other diseases to which chickens are subject. Since its use was discontinued in this vicinity, far better success has attended the efforts of poultry-rearers. Indian meal, stirred up with water and *baked*, is by some considered tolerably good to crumb into sour milk, but not by any means as good as wheat meal.

We feed young turkeys, also, with sour milk, keeping the mother-turkey in a capacious coop until the grass is cut. This prevents the young brood from running in the wet grass and getting chilled. As soon as the grass is cut, they are of sufficient size to feed upon the grasshoppers, and the coop is dispensed with. We hatched, last Spring, forty-one turkeys, and lost only one—and that one would doubtless have survived until Thanksgiving week had she not had the misfortune to incur the ill-will of little Malice Aforethought, who cast at her one of those hard compliments so numerous in the GRANITE STATE.

Marlboro N. H., Jan. 4th, 1858.

What is the Matter with the Turkeys?

"We have seen very few really good turkeys this year," said we, the other day, to a large poultry dealer at the market. "What is the trouble?"

"Trouble enough. I've been scolding at the farmers for a month past, for bringing such lean, half-grown things to market at all; and all the answer I get out of them is, 'They are the best we have, and you must take these, or none.'"

On examination, we find the truth to be, that, as the last Spring was late, cold, and wet, the turkeys laid late, hatched few chickens, and during the wet Summer brought up a much less than the usual quantity of young. A turkey must get its growth, or nearly so, before it will take on flesh. The pullets are tolerably fat and plump, but less juicy and sweet than usual; but the gobblers are decidedly lean, dry, and *stringy*. They will not be really good till March, and must have good feeding for that. As grain is plenty and cheap, we advise our farmers who have many turkeys not now in proper condition, to winter them till they are really good; then bring them to market, and they will get a good price for them.

Don't feed them on raw corn, either, all the time. Give them a change—such as buckwheat, oats, and barley, if you have it; and then cook it thoroughly, with small potatoes—if you have them—carrots, beets, rutabagas, or parsnips, if the prices of the roots are cheap enough to afford it. A deal of flesh-making material is used up in masticating, through the operations of the crop, so much hard provender as is usually given to poultry, while cooking does all that severe work for them, and they feed much easier with such help. It is said, that charcoal aids the fattening process in turkeys, greatly. We have not tried it thoroughly, but have heard so many well authenticated facts related about it, that we are inclined to think it may be so.

We believe in Turkeys, decidedly—particularly on Thanksgiving, Christmas, and New Year's. We raise them, too, as good as any body, and a great deal better than some. Get a hen turkey fat in the Fall, and it costs no more to winter than it does a pullet chicken. They saunter about the place so meekly and modestly, while the gobblers strut and fume about so vociferously—just like some *men* we have seen.

A POOR ENDORSER.—A worthy but poor minister requested a loan of fifty dollars from the cashier of a bank; and in the note requesting the favor, he said that if the cashier would oblige him, he would "pay him in ten days, on the faith of Abraham." The cashier returned word that by rules of the bank, the endorser of a note must reside in the State

A Model Highway.

As a general fact, highways in this country are in the following condition: The road-track itself is indifferently made, and composed of the soft rich loam scraped up annually from the side gutters; deep ditches are left on one or both sides, making it difficult to turn out; a few trees are planted here and there, near the fences, but many of them have been badly gnawed by horses hitched to them, or thrown out of the perpendicular by all sorts of street-going animals rubbing against them; sheep, cows, and geese are roaming at large, or lying down in the carriage-way; hogs are rooting up the ground on every side, and preparing it to grow a fine crop of weeds, for the benefit of neighboring fields and gardens; and each one of these vagrant animals is looking out for every open gate, and every weak spot in the fences, to get into the gardens, door-yards, and cultivated fields, which adjoin the street. We need not fill out the picture more minutely—it is so familiar to everybody.

But we rejoice to say, that signs of a better state of things are beginning to appear. In some towns, the barbarous custom of street pasturing has been voted a nuisance, and been voted out; the carriage track is neatly rounded over in the center, and covered with gravel; a slope is made on each side, just sufficient to turn off the water, and is covered with a firm and smooth carpet of grass. Trees are planted abundantly by the roadside, and they are cared for, and they live and grow. The grass on the margin of the track almost rivals in luxuriance that of the neighboring fields, and both when growing and when newly mown, present a beautiful sight.

We honestly affirm, that *there are* such roads, and we hold them up as examples of a Model Highway—examples worthy of imitation.

A Simple Remedy for Barked Trees.

To the Editor of the American Agriculturist:

In the Fall and Winter of 1856, I was obliged to keep a couple of goats for the sake of their milk, for an infant. During my absence to the City one day in the Winter, the goats got loose and committed depredations in my garden, by stripping the bark from several young Apple and Pear trees, and through a broken paling found their way into a neighbor's garden, and subjected his Apple and Pear trees to the same treatment, gnawing the bark off as high as they could reach. I supposed of course, the trees were all killed, and concluded to experiment on those in my own garden. I procured several newspapers, cut them into convenient strips for handling, and covered them with good boiled flour paste, wrapping several thicknesses around the wounded parts of the trees, thus forming an artificial bark. My trees were covered with foliage during the Summer and Autumn, and I could not perceive any difference in them during the whole season. My neighbor did nothing with his. In the Spring and early part of Summer, they looked promising, but as soon as the extreme heat of Summer touched them, they were withered and completely dried up, with an abundance of shoots from the lower part of the trunk below the wounds. All the trees are about six years old, and were transplanted from the nursery about three years since. There were two young Elms on the front road that shared the same fate as my neighbor's trees. Can it be that the covering protected the circulation of the sap and answered the same purpose as the natural bark?

J. D. V.

Westchester Co. N. Y.

Fig. 1.

Ornamental Work for the Garden, Lawn, Buildings, &c.—No. II.

The readers of our last volume will recall some sketches and descriptions we then gave of ornamental structures for the Garden. We now propose to resume that subject, our sketches of Southern Vegetation, commenced in the January number, not being sufficiently complete at present for the engraver. The illustrations, at this time, are copied, with one exception, from our own grounds or those of our stated contributors. There is room for a great variety in such ornamental work, and what is of consequence to the multitude, every one can consult his own taste and *finances*. An old tree, a wall, the side of a house or other building, may be the ground-work for a display of the beautiful. A few seeds, roots or cuttings, will often furnish the poorest laborer with the means of embellishing his home, and making it to vie with the abode of wealth in attractiveness.

We give in fig. 1 a classical vase which stands on a terrace in our lawn. It is of cast iron, and is painted white to represent marble. It stands on a base of cut limestone, which rests on a foundation of quarry-stone laid below frost. For one or two Summers we filled it with soil and planted it with verbenas, petunias, periwinkle, &c., but found that they required almost daily watering to keep them from perishing; and even then they made a sorry appearance. At length, happening to meet with the trailing vine *Moneywort*, we found it, on trial, preferable for this purpose to all others within our knowledge. It resembles the common periwinkle, somewhat, though the leaves are more oval and a lighter green, and its flowers are yellow. It endures warm weather patiently, and it trails over the sides of a vase or rustic basket in a most beautiful manner.

We beg leave to add here a word or two in favor of such ornaments as vases, sun-dials and the like, for the pleasure-ground. All who have once seen them will bear testimony to the air o elegance and refinement which they confer upon a home scene. Many of these ornaments being made of cast-iron or terra-cotta, can now be had at a cheap rate. Embellishments of this kind, vases especially, should be set near the house; they are in keeping with the artificial forms of the architecture of the dwelling, and form a sort of connecting link between the house and the cultivated grounds about it. Mr. Downing says: "It is the architectural idea carried a little beyond the house, and shows that the same feeling of taste and embellishment reigns in both departments of the residence." Rustic work, whether baskets, vases, seats, &c., may be set in remoter parts of the premises.

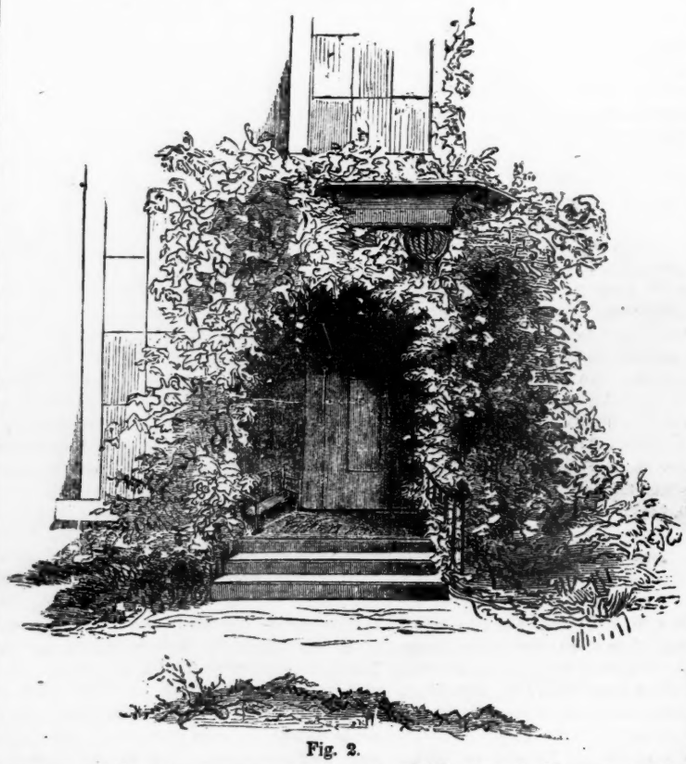


Fig. 2.

Sketch No. 2 represents the porch of Prof. Edward North's dwelling, in Clinton, N. Y.—The iron pillars and railing are completely covered with vines, and form beneath an impenetrable shade. The Chinese Wistaria, American Ivy, Clematis and Matrimony vine, all grow together in loving companionship. The Ivy begins to betray some ambitious propensities, and

is clambering up the wall of the house and around the second story windows. Taken altogether, this porch forms a very pleasing scene in Summer, and the arrangement of the vines is worthy of imitation.

The sketch, fig. 3, is designed to show the pleasing effect produced by training vines over the verandahs and along the cornices of a dwelling. It is copied from the "wing" of the writer's house. The vine is the American Ivy, which, after covering one end of a piazza, spreads itself along the cornice of the wing, clinging to the brackets and eaves, and making itself as happy as it pleases. It shields the piazza from the mid-day sun, and hangs down gracefully in long festoons over the library windows. In the autumn, it is tinted with purple and scarlet, such as no pencil can imitate.

No architure is so perfect as not to receive an additional grace from flowering vines; and most private dwellings, it must be confessed, are so defective in proportion or finish, that they need a little drapery to hide their deformities.

Many an uncouth house, now naked as a barn, and only a little more attractive, would look quite home-like and pleasant, if it were only surrounded with trees and flowers, and festooned with vines.

We give the dimensions of our Summer House, (fig. 4 below,) and the materials of its construction, because it satisfies our own taste, and is generally admired by all who see it. It has eight sides, three of them open, the others latticed and covered with vines. The posts are of cedar, three inches by four, and eight feet high above ground. The sides are four feet wide. Height of the apex from the ground, twelve feet. Diameter of a circle sweeping within the posts, nine feet. There is a scalloped verge-board at the eaves, which is not represented in the cut. All the woodwork, except the posts, is of pine. The whole is planed and covered with three good coats of light drab-colored paint. On its different sides are p'anted grapevines, honeysuckles and running roses. To make it a pleasant and healthful resort at all times, we excavated the soil within the house a foot and a half deep, filling in cobble stones at the bottom,

Fig. 4.

then putting on a layer of gravel, and finishing off with clean sand. This makes the ground always dry to the foot of lady or child. And we may here say that this summer house is a favorite resort of the family throughout the warm season. Many a book has been read, and many a children's tea party has been held, in its pleasant shade. The pencil of our lady friend, expert as it truly is, could not sketch the blushing roses, the purple grapes and the scarlet honeysuckle flowers, nor the snowy dresses and laughing faces with which every Summer adorns this lovely retreat. May

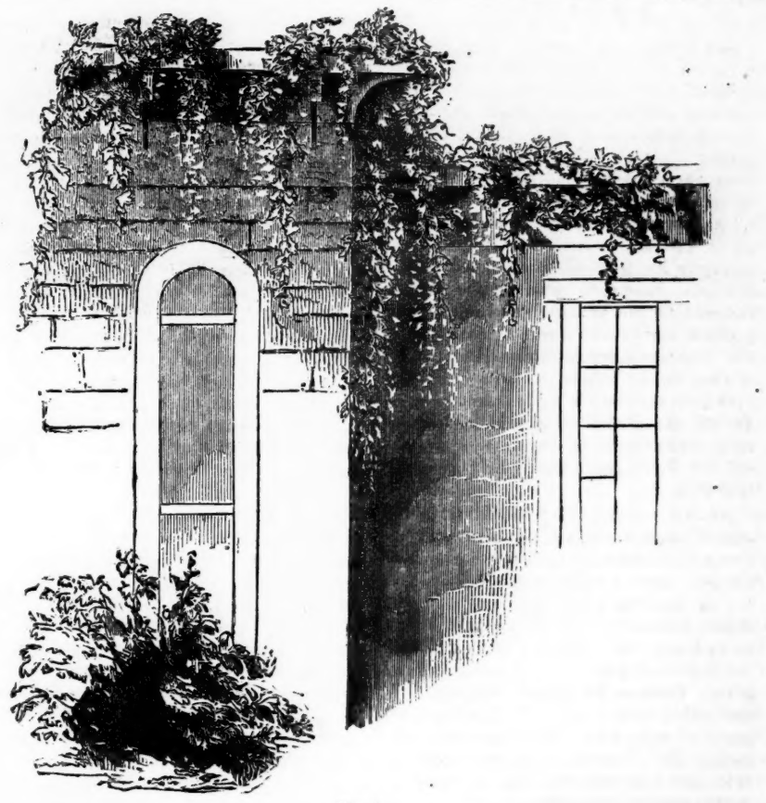


Fig. 3

some of our readers reproduce the like scenes within their own premises.

The Orchard—No. II.

APPLES—*Continued from Page 19.*

Thus, little regard can be paid to the books, or nursery catalogues in selections for the orchard about to be planted. The reputation of the fruits in the chief market where they are to be sold, and their aptitude to the soil and position where they are to grow, must better determine that point. In favor of this is another fact: the best fruit market at hand usually prefers the varieties which flourish in its own vicinity to those brought from a distance. Thus: Boston largely prefers the Baldwin, and Roxbury Russet; New York, the Newtown Pippin, and Esopus Spitzenburgh; Philadelphia, the Rambo, Vandervere, and some other choice varieties which flourish in its neighborhood; while the Rhode Island Greening grows almost everywhere in the Eastern States, and finds a market in all their cities. The Belmont is the best market apple of Northern Ohio, while the Cooper, the Yellow Bell-flower, and Rawles Janet, are popular in Cincinnati. So of other apple markets; each one has a different standard of excellence in its apples, and each favorite variety is usually grown in its own immediate neighborhood, or that section of country most accessible to it. Therefore, we will say: *cultivate as your principal stock, that class of apples which are surely successful in your own soil, and popular in your nearest and best markets.*

The extensive orchardist will, unless the market is a large one, and near at hand, or easily accessible by steamboat or railroad, cultivate few except the late keeping varieties. Near large markets, the very early kinds, and a moderate supply of the Fall varieties may be grown. But, as their season quickly passes, they cannot be relied on for extensive sales, and the late keepers are those to which he should look for profit; and now, as to the

NUMBER OF VARIETIES.

Here is the great difficulty on which new beginners are apt to stumble. They have made up their minds upon a few of the best *market* fruits. They ascertain what are the most popular, and productive, and, consequently, profitable for their soil; and, being full of their subject, they talk with friends, and consult the books, and nursery catalogues. Every different man has a most "capital apple," of whose merits he can tell a long story, and our orchadist is forthwith convinced that he must, at least have a sample tree or two of this. Every fruit author he reads, names a "choice collection" which is "perfectly reliable." Indeed, so convinced is the neophyte that they are "not to be dispensed with" in an orchard of the magnitude he intends to plant, that he resolves to introduce them all "in a moderate way," and, before he is aware of it, he has fifty, or more varieties scattered over his grounds where he should have had but ten, at the most, and his labors are frittered away on a wide list of apples, which, when they come to produce, scarcely one half are worth the gathering; while, with not over half a dozen well chosen kinds, he could pick a crop from the start, establish a character for his orchard, and go on in perpetual and increasing success. No; the best two early; the best three Autumn; and the three, four or at farthest, five best Winter apples, extending in all their season, from the very earliest ripening, to the latest keepers, are all that he should plant and

care for. No matter how choice the variety, nor how high its reputation, if the fruit were not congenial to our soil, we would discard it at once, and adopt the varieties, and *those only* which were *sure* in their good quality, and steady bearing.

We have had our own share of experience in the matter.

Some years ago a pomologist or two about Rochester, N. Y. had discovered the "Northern Spy," a paragon among apples—long keepers, delicious in flavor, "best" of all. It was praised in the papers and periodicals, discussed in the conventions, pronounced "good" by the savans, and adopted by the authors. The fruit was, in fact, all that was said of it in the specimens produced. The tree, according to its friends, was a "great bearer," a "vigorous grower"—in short, it was the excellence of the apple family all combined. In an orchard of several hundreds of newly planted trees, so thoroughly were we convinced of its value, that we put out a hundred, or more of them; and although they have stood a dozen years by the side of the others, for every individual, decent, marketable Northern Spy apple that we have gathered, we have picked a score of Greenings, Baldwins, Spitzenburghs, and Russets. Up to this date, our trees, time, land, and labor, have been thrown away on the famous "Spys," while the others have repaid our pains in all that we could ask or require. If they do not soon reform their manners, the vaunted Northern Spys will be headed down and re-grafted, (as we have already done with some other varieties,) with Greenings, and Russets,—sure bearers, and always saleable in market; and this is but a sample of the experience of others.

Another vital element of success in the orchard, is the

SELECTION OF STOCK.

Any one at all conversant with the habits of the different varieties of apples, knows there is a great difference in the growth and hardihood of the stocks on which they grow. This subject is not half enough considered by the orchardist. Let him go into a nursery where all the different varieties are growing in a good soil, each shading and protecting the other thickly in the rows, under good, and frequently forced cultivation, and he will at once suppose they are all alike thrifty, hardy, and promising. But such is only the fact while in the nursery. Some varieties are tender, slow of growth, and scarcely hardy when exposed in the orchard to the fierce heats and cold blasts which alternately shine upon and sweep over them. Other varieties are hardy under all circumstances—vigorous and stalwart. Others still, there are, which bend and writhe about, scarcely knowing which way to grow while young, and newly planted out without stakes, and propping.

These different habits are original properties of the wood itself, natural, organic, and only to be corrected, or overcome, by care and attention in its subsequent training. These different habits and appearances in the young orchard, come from the modern practice of the nurserymen in grafting their trees at the root, a much easier one than that of growing the natural seedling stock to its full or *branch* height, and then, working it with the variety to be put upon it. In this root-grafting process, the natural habit of the seedling is merged in the graft, and let the root, in itself, be as vigorous as it may, it is entirely controled by the growth, feeble, or vigorous as it may be, of whatever kind is worked upon it.

The result of this process of raising trees is, that, after ten or twelve years standing in the orchard, with equal care and cultivation, some trees are twice or thrice the size of others. Some are feeble and decaying, from their own innate weakness, or exposure to outside influences, while others are strong and vigorous as oaks, or maples. We think it will be proved, *as a rule*, that fruits of high quality are usually more refined and delicate in their wood, than those of coarser and harsher taste; that the common seedling is usually hardier in its stock than the highly cultivated "graft;" and therefore, that the common seedling, reared up to a size fit for transplanting into the orchard, and then grafted branch high, or at the point where its limbs diverge into the branching top, is better as stock than those which are root-grafted, with the wood of the choicer kind for the stem, instead of the natural, or seedling one. Thus, why have we no modern orchard of "worked" varieties which compare in size, and vigor at their prime, to the grand, stalwart old orchard of a century, or a century and a half ago, when root-grafting was unknown, or, if known, unpractised? We can point to the remains of old orchards, and to individual trees of the best varieties of apple, which are two feet in diameter, and upwards, near the ground; but they are grafted, as their huge connecting circles will show, several feet above the ground, at, or beyond the branching point of their limbs. The *new* wood of the finer varieties stood above the adverse influences which were prone to injure the naked trunk, were it of the same kind, and its spreading limbs and shadowy leaves shaded its own wood above, and kept it sound and vigorous, while the hardier wood of the wildling fed it with abundance of sap and prolonged its life many years later than if only supported by its own less vigorous stock. We think there is sound physiological reason in this, to which the orchardist who cultivates any kind of fruit must give his assent. The nurserymen may ignore the fact, it is true, for it is against their practice in all, and their interest in propagating many varieties, while other varieties are as hardy as any seedlings, and may be root grafted as successfully as to grow the seedling stock itself. For instance, the Rhode Island Greening, and the Roxbury Russet, though crookedly inclined from the root, and many others which naturally grow erect, are both hardy and vigorous; while the Newtown Pippin, Esopus Spitzenburgh, and various others, are comparatively puny and tender in the stock when worked from the root, and planted in the orchard. Such we beleive to be incontrovertible facts, and although the books say nothing of the subject, they should be well considered by the orchardist who is about to invest, not only his money in the first instance, but his land, and a large share of his future time as a permanent capital in the pursuit.

Taking, therefore, our own choice in the planting of an orchard, in every case where the varieties we sought to propagate were not of a decidedly robust and vigorous growth in the stock, we would resort to the natural stock grown in the nursery to full size for planting, then plant it in the orchard, and when well established in the soil, proceed to graft it with the desired variety. In this way, we believe an orchard will last double the time, than under the present practice of planting indiscriminately, from root grafted nursery trees. The extra cost of this procedure will pay in the first two or three years of bearing, and in the long run, its advantages will prove incalculable.

Nothing is more common than to see a young orchard, be it ever so well cared for, within a dozen years after planting, with more or less trees decaying, or dead, from the causes above named. These must be replaced, or the land is measurably lost, and then the orchard goes on halting, and imperfect. We have seen them side by side; the seedling transplanted out without grafting at all, the other of the finest varieties of root worked stocks. The seedling was vigorous and healthy, while with equal or perhaps better care, the root grafts were imperfect and unequal. There can be no doubt in our own mind of the *organic* difficulty in the latter.

THE SIZE AND CULTURE OF THE ORCHARD.

This may be indefinite. It may depend upon the extent of available land which can be devoted to it, the ability in means of the proprietor, the demands of the market, and the facilities of reaching it. It may be as well to set down to begin with, that the orchard of itself, provided justice be done to the trees, can be devoted to very little profit for other crops. Field crops, particularly hoed ones, may be grown to advantage for a few years at first; but the trees must be mainly looked after, even while the cultivated crops are growing. The trees must be avoided by the plow, and the harrow, the wagon, and the cart. The crops must be *hoed* crops solely, and low crops at that; such as beans, potatoes, and other roots, and vines.

Indian corn, the cereal grains, and the grasses are to be excluded in its best cultivation. Buckwheat is the only grain that may be permitted. That crop may be beneficial, as it may be sown as late as July, with a fresh plowing of the ground, which will help the trees in their Summer growth, while the plant, being mostly fed by the atmosphere and rains, draws less nutriment from the earth than other grains. Or, the land may be plowed two or three times in the course of the season for the benefit of the trees alone, if suitable crops cannot be profitably grown among them. At all events, the orchard itself should be first, and last, the chief object of attention. [*To be continued.*]

The Apple Tree Borer. (*Saperda Bivittata*)

A PRACTICAL FRUIT-GROWER'S SUGGESTIONS.

To the Editor of the American Agriculturist:

This destructive insect is one of the greatest drawbacks on the fruit culture of Pennsylvania. Its stealthy habits are such, that it requires the greatest care to enable one to check its progress, which could nevertheless be accomplished, if a simultaneous effort were made by all the fruit growers in a large district. Such an undertaking, by diminishing its emigration from neighboring farms, would materially prevent its injurious effects; and if the proper attention was paid to the subject all over the country, its final destruction would be more than probable.

The perfect insect fig. 2, is one of our most beautiful beetles, with two white, and three light-brown longitudinal stripes on its upper side; in length it is about ¾ of an inch. The larvæ (or grub) of this insect fig 1, is what injures our fruit trees. The eggs are deposited by the perfect insect close to the ground, about the latter part of June or beginning of July, during the night, and the grass around the trees protects the eggs from being found by the birds. In a very few days, the sun hatches the young larvæ, which soon work their way into the trunk, where they can be discovered by the

plugs of woody fibers ejected through the hole.

In the second year, the insect assumes its perfect form, leaving the trunk during the night, about the latter part of May or beginning of June, when it goes forth to lay eggs for a new generation.

The nocturnal habits of this insect, make it the more difficult for the common farmer or orchadist to secure that full acquaintance with it, which is necessary to be able to stop its ravages. The only sure way to destroy these insects, is to attack them in the larvæ state. During Summer, they must be hunted up, and cut out with a gouge, so thoroughly that none remain.

To guard orchards from further depredations, procure thick hardware paper and cover the trunk to the hight of one foot above the ground, and one or two inches below it. Young orchards protected in this way, can be kept clear of this troublesome and destructive pest. The paper covers must be renewed annually, and no later than the beginning of May. This can be best accomplished by removing the earth from the trunk with a garden trowel, and winding the paper and tying it close to the trunk to prevent the beetle from getting behind it. If the paper be coated with tar, as far as it is in contact with the ground, so much the better. After the paper is thus applied, the ground ought to be leveled around the trunk. If the perfect insect deposites its eggs on this paper they will dry up when hatched, for want of nourishment, since the larvæ live on the soft bark of the tree first, while young, and on the soft wood when older. Should they be capable of locomotion at this stage, they must go above the paper to enter the tree—which I have not found to be the case in three years' close observation—or starve ; and should any enter above the paper unprotected by the grass, the birds would soon devour them. In case any escaped from them, the eye of the careful fruit-grower, would detect them at a glance in passing the trees, when with a knife the mischief could soon be remedied, and the trifling wound would soon heal over again.

With these paper covers, I protected a young orchard for the last three years. With a single exception only, not a borer gained foothold, and he secreted himself under the straw band by which the tree was secured to a stake three or four feet from the ground, where the fruit-grower should frequently look during Summer.

If any one considers all this too much trouble, he ought to make up his mind not to eat fruit of his own growing in a comparatively short time.

J. S. Keller.

Orwigsburg, Schuylkill. Co. Pa.
Dec. 15. 1857.

REMARKS.

We commend the above plan to the attention of fruit-growers, as Mr. Keller is not the only one who has tried the paper wrappers with success. We have often recommended another mode of destruction. Like most night flying insects, the parent beetles are either attracted or dazzled by a strong light, and if torches or bonfires are kindled in the evenings during the month of June, large numbers of these and other hurtful insects will fly into the flames, and be destroyed. An excellent plan is to suspend a lantern over a vessel of soapsuds. The insects, striking the glass in their flight are precipitated into the water below, the soapy nature of which prevents their climbing up the sides.

The united action of a neighborhood would soon make inroads upon the swarms of insects, not excepting the curculio, which are a serious drawback to the success of the fruit-grower, and materially dampen the ardor of the amateur.

Pruning Peach Trees.

To the Editor of the American Agriculturist :

I found some stunted and neglected peach trees, in a lot I purchased, standing in old sod, which, after turning over the sod around them, I boldly topped in the Fall—cutting away nearly all the old limbs, as I had seen recommended in your paper. Some said I had spoiled or killed my trees. Last Summer I had a crop of good peaches on these trees, and now they all have fine thrifty branches, while my neighbor's trees just over the fence look scrawny and black, and they bore fruit about the size of a hickory nut.

I advised him to serve his trees as I did mine, but he, good soul, don't believe that the vigorous pruning, with a loosened soil and slight manuring alone worked the wonder, but thinks I did something more to them which I chose to keep a secret ! He is *afraid* to prune his trees—and so are many others; who, in consequence, have short lived trees and poor fruit. I am now satisfied that the peach tree must be boldly pruned, and suppose it may be done just *now* as well as at any time. One season's fruit may be lost by it, but you will then have renewed young trees in place of the old and unprofitable ones.

E. F. Zevely.

Cumberland, Md. Dec. 30.

Investigations upon certain Fruit Tree Insects.

BY A. O. MOORE, NEW YORK.

To the Editor of the American Agriculturist :

My request in the December *Agriculturist* that any of your readers who had seen the Bark-louse, similar to the one there described, upon other trees than the Pear, should send me specimens, has called forth responses both numerous and interesting, from which I have derived more information on this subject of my investigations than I have been able to obtain from all my entomological books and acquaintances.

Specimens of the Pear, Apple, Currant, American Mountain Ash and Elm, have been sent to me, upon all of which the same variety of Bark-louse, was found. I think that upon the Pear there is generally a larger developement of the insect, though upon some young tender growths of other trees it reached the full size.

As many of the letters accompanying specimens, contain items of general interest, I cannot do better than to make some extracts.

Letter No. 1.—From James Meyers, Norwood, Columbia Co., Penn., Dec. 1st. 1857. "....About the first of June last, I discovered that some of my apple trees planted last Spring a year, were literally covered with this insect. I repeatedly washed them with soapsuds. This destroyed the insects upon all the trees but one, which for want of a sufficient supply of roots when planted, has been of slow growth. My attention being directed to the subject, I found that notwithstanding the repeated washings with soapsuds, this backward tree was again covered with the Bark-louse...."

Note.—Mr. Meyers finds an increased liability to the attacks of this insect where the tree is of feeble growth. This tendency has been often noticed with almost all insects. A thrifty growth is a great security against such depredators, first by rendering the juices of the tree less accessible or less palatable to the insect, and secondly, by the power which the plant then possesses to repair any damage it may have sustained.

Letter No. 2.—Jacob Hewes, Leiperville, Delaware Co, Penn., 12 mo. 3, 1857. "....I enclose an apple twig, with the bark-louse upon it, taken from one of my neighbor's trees. My remedy is soapsuds with a gill of spirits of turpentine to a bucketful, applied with a hand scrub which I find effectual...."

Letter No. 3.—Mr. Elim L. Johnson, Durham, Ct., Dec. 7th, 1857. "....I discovered some four weeks ago, four of my pear trees white specks almost completely covering them from the ground to the tips of the limbs. Rubbing the stem of the tree with the back of my pruning knife produced a beautiful red color on the blade, I concluded of course it was something that had life, and could not do the trees any good. (I take three agricultural papers but have never seen anything written on the subject before.) I applied very strong soapsuds with a coarse woollen cloth, rubbing very smartly for several minutes on each tree. I am in the habit of washing my fruit trees in this manner each year about the first of October. Most of the trees are growing very finely, but those that have the louse upon them have grown very little during the past season. The affected trees were in good cultivated ground. Two were the Bartlett and two the Flemish Beauty. Other trees growing close to the affected ones have none of the bark-lice upon them. I have 110 apple trees, set out four years ago, which are all entirely free from this insect. Last Spring I procured four Baldwin apple trees from a Flushing nursery; they have been carefully cultivated through the Summer, yet these four are all badly effected by the bark-louse...."

Note. We may get a hint from Mr. Johnson's experience to watch carefully all importations into our grounds to see that no tree affected by this pest, is allowed to pass unnoticed; indeed, except in very rare cases, every tree should be excluded which has a single louse upon it. Nursery men, for their own credit, and the good of their customers, should examine their trees, and free them from these and like insects before they are sold. This is a point too often, in the hurry of the season, neglected. Mr. Johnson also states an important fact noticed by myself, that other trees growing near the affected ones are not attacked. In other cases, however, the introduction of a single leprous tree in an orchard, causes a contagion which reaches every tree. Entomologists state that the female of this insect is wingless, though the male is possessed of four wings. If this is the case it is an interesting inquiry, how do these insects spread from tree to tree. Their minute size would almost preclude the idea of their crawling upon the ground from one tree to another.

Letter No. 4.—Lewis C. Francis, Springfield, Illinois, Dec. 8th, 1857. "....Enclosed you will find specimens of the same insect on *apple* branches, and no mistake. Your description of them is the only full, and complete one I have ever seen. I was in the dark with regard to them for a number of years and examined every fruit book I could find to know what they were, but could find nothing said about them, and indeed, I have yet to see the first fruit book in which they are even mentioned. The books describe the woolly aphis, and I tried for a long while to make myself believe that these were they, but I could not see any *wool* about them. The books also describe the scaly bark-louse, of the same species but a different insect. I finally procured Dr. Harris' work, and in it I found a short description of them. We have on one farm, three orchards, two of which are very much affected with this insect, the third is perfectly free and we intend keeping it so...."

Note. Mr. Francis' experience in trying to find information on this insect is like that of many others. Our commonest insects are many of them yet undescribed. Success and speedy hands to those who, like Dr. Harris, and Dr. Fitch, are engaged in enlightening us on the subject of destructive insects. I could wish that Mr. Johnson had sought and communicated the reason why two of his orchards are affected and one not.

Letter No. 5. Jacob Stauffer, Mount Joy, Penn. Dec. 8. 1857. "....I find a species on my apple tree shoots of obovate form, of a pearly white color, and of a papery consistency, covering ten or more oval eggs. Aug. 15th. while examining the larvæ of the *Procris americana* on my Isabella grape, I noticed a beautiful species of the scale insect (another species of the coccus) and made a drawing of it which I will copy. It is of a regular oval form of a pearly white color, having an oblong, white, oval space centrally on the back, with radiating black square spots. I did not notice any anal bristles; it was of a smooth and polished exterior: *fig.* 1 and *fig.* 2 show upper and lower sides of the same insect...."

Fig. 1. Fig. 2.

Fig. 1—A species of Scale Louse found upon the grape vine. Upper side—magnified.

Fig. 2—Underside of same—the line between these figures shows the natural length of the insect. This species is not covered by a white scale. It is much larger than the bark-louse, shown in fig. 6.

Note. Mr. Stauffer has previously communicated to me very acceptable information upon other insects. His refreshing enthusiasm and skill in portraying with his pencil what his pen describes add much to the interest of his letters. I hope he will excuse the liberty I have taken with his drawings as I did not think of publishing them until too late to obtain his permission.

Letter No. 6. Wm. Hale, Peoria, Illinois, Dec. 12th, 1857. "....The enclosed apple twig is from a graft one year old—also strips of bark from two apple trees six or eight inches through, which have grown very thriftily until the last two years. I first discovered the bark-louse on a tree in front of my house, and it appeared to spread to most of the trees in my garden—about forty. If I had taken that tree in hand when first discovered I presume I might have stopped its ravages. I washed a part of the trees as far as I could reach with common whitewash. They have decidedly a more healthy appearance than those not washed. ....The longest strip of bark I send you, I take from *an Elm* on the side walk...."

Note. Mr. Hale could not, I am sure, have been aware of how much pleasure he was destined to give me when enclosing that bit of *Elm.* After a hasty examination when first received I consigned his letter and specimens to the breast pocket of my coat; so that it has accompanied me in my daily avocations for some three weeks. It was to-day taken out and added to my *pile* of twigs, branches, &c., for a final examination. (I believe the Editor still charges me with using the columns of the *Agriculturist* to obtain my winter's supply of fire-wood.) With a pocket lens I soon discovered among the mass of eggs a slight motion. I held my breath and steadied my hand for a better focus. True enough the warmth of my pocket had hatched some of the eggs. On its back, struggling among wilted eggs and fragments of various kinds lay something possessed of legs, at least. In a moment of ecstacy I uttered an exclamation. Alas! who would have thought the breath could have blown away that huge creature that, through the magnifying glass, looked as big as your *eye.* I had forgotten that a dozen might, in reality, have been put on the *dot* of your *i.* A long search followed. Scale after scale was carefully scraped off and examined with the lens. Heaps upon heaps of skins, scales, eggs; perfect Golgothas, were ransacked in vain, until the slip of Elm was nearly as clean as if it had received the washing of soapsuds advised. I acknowledge I was quite disconsolate. Perhaps my paternal feelings were somewhat touched, for did I not hatch them myself!

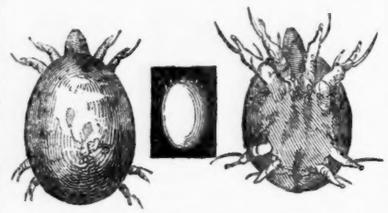


Fig. 3. Fig. 4. Fig. 5.

Fig. 3—An unknown parasite found alive among the eggs of the bark-louse, Jan. 3, 1858. Supposed to be the natural enemy of the bark-louse.

Fig. 4—An egg of the parasite.

Fig. 5—Underside of the same parasite.

These are very much magnified; they are barely discernable by the naked eye.

At last, however, I was again gladdened by the discovery of a slight movement as before. I kept my feelings virtuously under control until I had secured my prize and brought it under the more powerful lens of a "*Nachet*" microscope. My pencil soon made still more secure the possession of the main points of the investigation; and in *Fig.* 3 and *Fig.* 5 you have the portrait. I soon observed, however, the dissimilarity between the insect before me and the one described in the books as the *Coccus cryptogamus* (meaning the concealed Coccus.) The Cocci are of the true insects which have only *six* legs and here were plainly *eight* legs. Perhaps all your readers are not aware that Entomologists have denied us the right to call spiders and other *eight*-legged creatures, *insects.* But what am I to do with my discovery? Perhaps some of the learned ones will tell us. I found among the dark red eggs of the bark-louse a number of translucent *white* eggs, some of them seemed to be just acquiring rudiments of legs; (See *Fig.* 4.) others still larger with plainly discernable legs and reddish veins or spots upon the body, and the largest having assumed the red as the predominating color, while white spots were still to be seen. I would therefore suggest that the creature here figured is not the enemy we are combating, but *a useful friend*—a species of the Acarus or Mite which lays its eggs among the Coccus' eggs that its young may feed upon them, and being more hardy, and hatching earlier these were brought to life by the warmth of my person, while the Coccus' eggs were dried up or remained unhatched. I shall be glad if Mr. Hale will forward to me at different times, between this and July next, portions of the affected Elm that I may continue the investigations. I could find no such eggs or Mites among the Cocci on other twigs sent. If the small twigs were removed now from the tree, they would wilt so as to prevent the proper developement of the insects.

Mr. H. also mentions in his letter a worm which girdles his fruit trees, in a peculiar manner. I should like specimens of this insect and further descriptions of its manner of working under the bark.

Letter No. 9. Mr. L. J. Titus of Lambertville, N. J., sends a piece of a currant bush, attacked without and within by foes. Besides having this identical bark-louse upon its exterior, it has suffered from the Currant borer. The latter insect deserves a more extended notice than can be given. If Mr. Titus has branches with the insect still in them, will he not forward them to me for examination?

Hon. D. Russell, Portland, Ct., Jan. 14th, 1858. (after the above was partially in type) communicates interesting experience in regard to the same insect on his Apple trees. When the tree, through neglect, is past recovering but has a healthy *stump* Mr. Russell recommends cutting back to the healthy part and re-grafting.

A young Mountain Ash, among the last specimens received, presented a highly interesting instance of the complete covering of an apparently healthy tree, by the scales of this insect One can scarcely place the end of the finger up on any part of this tree which is unaffected.

To the numerous other contributors we return thanks and would exhort one and all to watch carefully the developement of this troublesome insect. *First*—Lest its increase be such as to place the remedy beyond their reach, for though it may be easily exterminated upon young and recently attacked trees, it is sometimes almost impossible to remove them from neglected ones. *Secondly*—That more information may be obtained concerning the history and habits of this insect as well as the success of the various means of destroying them. To show that the subject is by no means exhausted I would suggest the following additional points for inquiry.

Of what is the paper-like covering composed and how produced? Is it spun, like the Cocoon of the Caterpillar by spinarets at the oral or anal extremity, or, does it exude from other parts or pores of the body, like the down of the wooly aphis?

At what time in the insect's growth is its shell formed?

When are the young first hatched and what is their form, &c.?

How does the insect imbibe its nourishment?

What are its means of locomotion? In the stage in which I have observed it, it possesses neither legs nor wings.

What difference of form or habits between the male and female?

Does either possess wings at any period of growth?

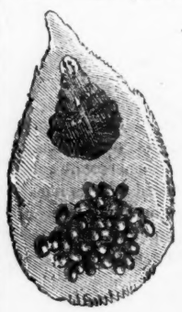
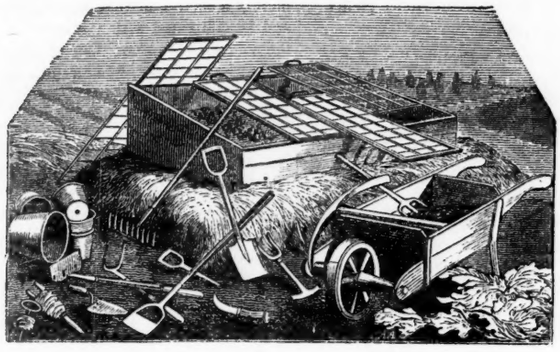


Fig. 6.

Underside of one of the white *scales* usually found upon Fruit Trees.

Since making the drawing of the parent insect published in the December *Agriculturist,* I find that after the insect has deposited all its eggs, it contracts in length and is of the shape represented — very greatly magnified—in *Fig.* 6, which shows the under side of a "scale" with the body of the insect at the upper extremity, and the eggs heaped together at the lower.

I would further add that when this insect has been suffered to become very numerous, they may be scraped off with the least injury to young branches by a flat pine stick, cut thin and sharp at the edges. This scraping should be followed by the application of soapsuds.

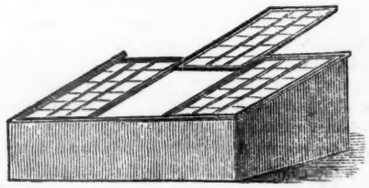


Hot Beds, and How to make them.

The present month is a suitable time to make early hot beds, especially at the South. For ordinary purposes, in this latitude and further North, the first or middle of March is early enough. Six or eight weeks from the time of sowing, ordinarily bring forward plants to a suitable size for transplanting, and it is well to make the bed about two months before the season will be likely to admit of putting plants into the open ground. Various plans are adopted, and various fermenting materials used in constructing these beds. Some prefer excavating the earth, and sinking the beds; others, build wholly on the surface. One uses spent tan, or dried leaves, to produce the requisite heat; another, selects coarse stable litter alone. If a gentle, long continued warmth, is desired, the leaves or tan are suitable materials; but, if an active heat is desired, stable litter, or litter mixed with leaves are necessary.

To meet the wants of the farmer or the young gardener constructing a hot-bed for the first time, we will be as explicit as brevity will admit. Every one has noticed the smoky steam rising from a heap of manure thrown from a horse stable. This is a *hot-bed*, but too violent in its action, and without the needed covering of earth for the roots of plants, or the frame to protect them from outside frosts.

In the upper part of the engraving above we have the manure taken to the garden as a more suitable place for the bed. There we have the heap of fermenting material upon which is placed a wooden frame, like the following cut. This is, say *twelve* feet long, more or less, *five* feet wide, *one* foot high in front, and *two* feet upon the back. This frame is best made of pine planks, one-and a half or two inches thick. Where two planks in height are used, they should be grooved together, to prevent any escape of heat between them. The



side pieces may either slip down between upright cleats upon the end pieces, or be hooked or bolted to them so that the whole may be taken apart and stored away when not in use.

The bed may be as long as desired, placing several frames together if one is not sufficient. The ends should be the thickness of the sash higher than the sides, with one half rabbeted out for the sash to fit closely in and slide upon.

Cross pieces should be fitted between each two sashes, and rabbetted out like the ends, to allow each sash to slide up and down independently of the others.

The sides of the frame should be bevelled off so that the sash will fit closely, and every precaution used to retain the heat given out by the fermenting heap beneath.

The sashes are usually made by sash makers, with a strong outer frame and middle rails running lengthwise only, that the water may run off freely.

Where glazed coverings cannot easily be obtained, oiled cotton cloth may be tacked to frames which slide up and down, like the sash. Or a cover for the whole bed may be hung by means of hinges upon the upper side. The cloth covering is only to be used where glass is procured with difficulty.

THE BED.

Choose a dry situation, sheltered upon the North by evergreens, or buildings, or by a tight fence. Make the bed *upon the surface*, running East and West, and about one foot larger each way than the frame which is to be set upon it.

The smoking heap of horse manure is our most convenient material, although, if dry forest leaves are at hand they may be mixed in, using one-third leaves to two-thirds manure. If the manure is *strawy* no matter, and if it has heated once before, it will ferment again. Make into a heap about four feet high, shaking it over with the fork and beating, but not treading it down as you proceed. Level it off and put on the frame and sash, fronting the South, and leave for a week to settle and generate heat

After six or eight days the mass will be in an active state of fermentation, shown in part by the rank steam arising, and by the coating of moisture on the glass. This is a proper time to cover with earth, leveling if necessary. Dry, rich loam, saved under cover for the purpose, is the best, but good garden soil will answer, only be sure it is dry. Five or six inches of soil is a medium thickness for this covering. Rake it over finely, leaving the surface smooth and level. Put on the box and sash, and examine the earth daily, and when a moderate, uniform temperature is shown, which is usually in two or three days, the seeds may be put in.

If the heat at any time appears too great, raise the upper part of the sashes for a few inches, that the external air may cool it. If the warmth is not sufficient, bank up the sides and ends with fermenting manure, which will tend to heat the whole mass. During very cold or snowy weather cover the whole with straw, or mats, or boards, and shovel away the snow as soon as the storm is over.

After the plants show themselves, a moderate airing should be given the bed each day, unless the weather is freezing. During very mild weather the sashes may be slid entirely off, closing at an early hour in the afternoon. Especially do plants need this airing after they have thrown out the second and third leaves, and are nearly ready to transplant. A neglect of a single hot day will often scald and seriously injure them. Previous to transplanting give the bed a good watering to to make the earth adhere to the roots. Water at other times as needed, or the sashes may be left off during a warm rain.

Some More Pumpkins.

To the Editor of the American Agriculturist:

* * * But I must tell you about a *Mammoth Pumpkin* raised by one of our neighbors up here. The seed was sent to him by one of his relatives in France. He planted some of them in what was formerly the bed of an old pig pen. From one seed he raised *four hundred pounds* of pumpkins; the smallest weighing 75 pounds, and the largest, 150 pounds. This may seem nothing to you, but I tell you it looks big up here, in this corner of the world.

W. F. J.

REDDING, Fairfield Co., Conn.

The Pea Nut—*Arachis hypogaa.*

To the Editor of the American Agriculturist:

This nut is a native of South America. It was formerly used, in the West Indies, as a food for negroes, and is now raised for exportation, as it is particularly useful to the frequenters of the theatre, opera, and such places.

The plant is an annual; its flowers are of the pea kind, and their color is yellow. The petals of the flower fall off and an oval pod appears, "which is pushed into the ground by a natura motion of the stalk, and there it is matured Thus it seems that the idea that the nuts are the *roots* of the plant is erroneous; they are the *seed*. One bushel of them will make a gallon of oil, which is excellent for soap." J. H. T.

Cambridgeport, Mass.

Note.—The pea nut is shown above as growing in a pot. We believe it is seldom or never cultivated in this way—certainly not, except as a matter of curiosity. The vines usually run close along the ground, from which the seed stems shoot down into the soil as here shown, but not so far below the surface as those represented in the engraving.—ED.]

Notes from the Green and Hot Houses.

A NEW DEPARTMENT.

We commence with this number, to give current notes of valuable old and new plants, as we find them growing from month to month in the best *American* Green and Hot Houses. Notices of this kind are quite too frequently taken direct from foreign works, and therefore not specially useful here. We hope to thus supply a want for a long time felt by American Horticulturists and amateurs.

By the way, we invite Horticulturists generally to assist in sustaining a vigorous horticultural department in the *Agriculturist*. With a circulation unequalled by any similar periodical in the country, and with ample room in our pages, we think this journal may well be adopted as a medium for the interchange of opinions, experiences, queries, &c., among persons interested in Horticulture generally.

GREEN HOUSE PLANTS.

ACACIA *pubescens*—

The Acacias are a beautiful and very extensive tribe of plants, natives of Australia, where they are scattered over the whole country in great variety. There are more than a hundred distinct species now known, some of them large trees from fifty to a hundred feet high, while most of them are shrubs growing from four and five, to ten or twenty feet in hight, and are all quite ornamental. The genus is represented in South America and other parts of the world by the "Mimosas" which all bear compound leaves. The peculiarity of the New-Holland Acacias, is that of being Aphyllous; the dilated, foliaceous footstalk performing the functions of the true compound leaf. The great number of species of Acacia having this remarkable economy in Australia, forms one of the most striking peculiarities of its vegetation. Many valuable additions have been made to our collections of this genus, within the past few years. Several of these, from their dwarf habit, can be grown to perfection in the smallest sized greenhouse.

"Acacia *pubescens*" has been long known, and is, perhaps, the finest of all those varieties capable of being grown to perfection in a moderate sized glass structure. This variety developes its true leaves. The habit of the plant is very graceful, with slender branches, inclined to weep. The foliage very fine and dense, of a pale green color; flowers of a pale lemon color, produced in immense masses on plants a few years old. With a few exceptions the Acacia grows well in a rather strong loam; *pubescens*, however, especially when young, requires a light soil, enriched with good leaf mould, and well drained; it needs very careful watering during the Winter season, as the least over watering destroys the young roots, and the foliage becomes yellow and speedily falls off. It is one of the most difficult plants to recover when once brought into a sickly state by this means.

GREVILLEA *Tillermanii*—(*Tillerman's Grevillea*).

A handsome evergreen shrub of very neat habit. It is a "Protead," a family of plants remarkable for their curiously formed flowers, many of them very showy and among the best of Winter flowering plants. They are mostly natives of New-Holland; some, however, are found at the Cape of Good Hope, and a few species only in South America, where they are found growing on the barren hills and wastes in great abundance. The subject of our notice is from New-Holland; it bears large clusters of bright red flowers in great abundance, which remain for two or three months. It is readily cultivated, requiring the ordinary treatment of hard wooded Green House plants.

GREVILLEA *Sternbergii*.

Another very beautiful "Protead," with white flowers, which are produced in immense clusters. The leaves are wedge shaped, of a dull green color. Very bushy and compact in habit. It is especially desirable on account of the few Winter flowering plants we have which produce pure *white* flowers in any abundance.

PENTAS *rosca*.

Very similar to the old and well known "Pentas *carnea*"—but in most respects superior, especially in the form and color of the flowers. It is a fine Summer bedding plant—although tender and requiring the warmest part of the Green House in Winter. It is from South America. It does not grow so straggling as *carnea*, and the trusses are more compact in form. Color rosy lavender. It is a good dwarf growing plant and will be desirable for massing in the flower garden. It is quite new, being only introduced here the past Summer.

STOVE OR HOT HOUSE PLANTS.

APHELANDRA *roi Leopold*—

We have now in flower this lovely plant, which is one of the very best of this class. The leaves are of a light velvet green, broadly veined and edged with silver white, very distinctly marked. It bears corymbs of bright canary colored flowers, which, with its splendid foliage, make a most suberb object. It is a tropical plant, requiring shade in the hot season and rather a moist atmosphere to grow it successfully. Soil, rich sandy loam, well drained.

APHELANDRIA *squarrosa citrina*.

This is another Acanthad, with more brilliant flowers than the above, but has not so handsome a foliage. It is, however, more hardy, and can be grown in the warm part of the Green house with careful treatment. The flowers are of a rich lemon color.

ESCHYNANTHUS *splendidus*

This is a new variety of the genus, recently introduced. It is of erect habit, and very showy. Each shoot is terminated by a large cluster of tubular flowers of orange and crimson. It is something like the well known "Eschynanthus *speciosus*," but much superior to that variety. The flowers are higher colored, and larger, and it produces them in greater abundance. We have now a number of distinct species of this genus, and although of tropical origin, they adapt themselves to the temperature of the Green house very readily. Most of them are semi-parasitical in habit, and can, if desired, be grown upon a block of wood with a little moss and fibrous peat attached, and suspended from the roof or wall of the hot house. In this way, they flower more freely in stove heat, than when grown in a pot.

ESCHYNANTHUS *Lobbianus*.

Another new species, with very dark red flowers, and grown to the best advantage suspended either in a pot or on a block of wood, the habit being drooping, and shoots rather slender. All these plants are of a succulent character, and to insure a profusion of bloom, should be kept rather dry after they have completed the season's growth, until the flower buds are formed, when moisture may be gradually increased. They grow freely in any well drained soil.

ROHEA *cordata*.

This fine plant is half shrubby in habit, with dark green leaves, and bears large clusters of bright pink colored flowers, It is a very profuse bloomer, and flowers throughout the Winter months. It is allied to the "Rondoletias," or is merely a section of that beautiful tribe of plants, and is cultivated with the same facility. From the delicate nature of their roots, they require a light sandy loam, with a little leaf mold, and plenty of drainage.

ROHEA *amœna*.

This is distinct from *cordata*—growing larger, foliage rough, hirsute, and of a reddish color. The color of the flowers is rosy lilac, produced in the same profusion, but later in the season than *cordata*. It is a neat and pretty plant, well worthy of cultivation.

Thinning and Pruning Woodlands.

To the owner of "woods," as they are usually called in the United States, the terms at our heading may appear strange and superfluous. A great many of our readers, who have scarcely got beyond the "cut and slash" habits of new settlers in heavily timbered lands, may wonder why anybody need talk of either thinning, or far worse, pruning his wood lot. To such we have little to say, other than while his wood is yet plenty, be sure and take good care of it. The time *may* come when you will mourn over the waste your own thoughtlessness had caused.

All through the best populated portions of the old States the land has been denuded of nearly or quite all the wood that should have been spared generations ago, with some exceptions. In the newer parts of these States and in considerable portions of the recently settled ones, the cutting and destroying process is yet at work with energetic intensity; and since the railway system has been so widely extended, the havoc among the trees has grown still more fast and furious. And scarce now, except in the wide prairie regions of the West, has any like a careful looking to, and preservation of the remaining forest lands attracted the attention to which they are entitled.

In most of the older States there are considerable tracts of land so broken and unfit for tillage or even pasturage uses that wood will grow on them more profitably than anything else, and have thus a self-protecting power of their own—no thanks to their owners. Yet there are thousands of farmers where wood, if not absolutely necessary for fuel—coal superseding it, both in economy and convenience—woodlands for other purposes are no less a necessity and convenience than they were a century ago. Wood and water, are choice gifts of nature, little appreciated where they abound, and only properly valued where there is want of both, or either has been stinted in the supply. Of late years our "wood-lots" have rapidly decreased. The multiplication of manufactories, and the extension of railways have fast denuded them, and many otherwise thoughtful landholders, and farmers have awaked to the conviction that they must husband those which remain with all possible care and economy, or lose absolutely valuable parts of their estates which they can never regain.

We are not about to read a homily to our farmers on the subject of preserving their forest lands, or wood-lots, which our remarks just written might seem to imply, but in this season of comparative leisure on the farm, advise them somewhat in regard to taking care of some pleasant little patch, or grove of woodland on their premises, or perchance some "slashing," the remains of a denuded piece of wood recently taken off where the young brush-wood and saplings have taken vigorous hold to renew it once more in shade and beauty. For many years we have watched sundry spots of the kind, both of our own and those of

others; and knowing the pertinacity with which, under neglect and even continuous destruction they still grow and thrive, we wish simply to hint that under a lenient and careful hand they will rapidly restore of themselves, the waste and slaughter that has been made upon them. We can point out scores, possibly hundreds of incipient groves lately sprung up in spots where the original forest was but recently cut away and the land devoted, after a thorough clearing, to farming purposes, but in a neglected corner postponed for a more convenient season—like some things of a much graver character—which are now covered with a thrifty, close growth of maples, beeches, oaks, elms, hickories, lindens, pines and hemlocks, stretching far above the unsightly stumps below them, which only need the discriminating aid of the ax and hatchet, to make them, in a few years to come, the most ornamental, attractive, and valuable places on the whole farm, and still they are neglected, or occasionally, with a recklessness to us wholly unaccountable, are reslashed, piled and burned over with a savage satisfaction wholly incomprehensible to one of any taste, or regard, even for the future value of the estate which contains them. We would gladly arrest such waste, and give a little of our experience to their owners, as well as instruct others who would fondly train up their own little spots of brushwood into groves of future beauty and utility.

Young woods, protected from the depredations of cattle and sheep, grow, on natural soils, with a thrift surprising to those who have not watched them. For a few years, until they have reached eight or ten feet in hight, they should not be disturbed—no matter how thick they may grow. They thus get firmly rooted in the soil. The stronger and more thrifty among them take a character of their own, and acquire a hardihood which will send them on, when cared for, with wonderfully increased vigor—and such is the time for the owner to enter among them for thinning and pruning. If they be full of old decaying stumps, and tree-tops no matter. They are all the better for the young growth. We have tried it for many years past, and know how the young roots nestle and run under the decayed remains of the old wood. Winter is the best season for selecting the sturdiest and thriftiest, and plying the ax to the remainder. Even now we are at a "job" of the kind, and nothing gives us a heartier, more grateful pleasure than to look at our day's work after it is done, and see the beautiful young saplings as they stand apart out of each others way, soon to recommence their strife in shooting up into light and shadow, and covering the whole ground with a dense mass of shade as before. We have several of these little groves which, for near twenty years past, we have had in hand, and as often as once in four or five years gone through with our men, and thinned and pruned them. They were "brush" at first; now beautiful young groves and forests. We might imagine, on first looking at one of them, that nothing is easier than so thinning them out. It is not so. Let us see:

Deciduous woods, or those which are bare in Winter, are of numerous variety, and very miscellaneous in growth, and position. Evergreens are less so, particularly on upland; yet the deciduous varieties more or less intermix with them. Among them all, some varieties make better growth, or are more valuable as timber trees than others. When going into them for thinning purposes, it is important to know which you are to select to stand, and which to take out. In a wood for general purposes of utility, or for shade and ornament only, we would retain all the varieties which are useful and of rapid growth. At the first thinning, three, four, five or six feet apart is far enough, and generally close enough to have them, if not over six or eight feet high. Too much thinning lets in the sun, dries up the roots in Summer, and stunts them. *The ground should always be kept shaded, after the leaves are out.* It will do no harm for a few years to let those which are cut away remain on the ground and decay, if you have no other use for them; or, they may be taken out altogether. The lower limbs of the remaining ones should be trimmed close to the bodies for three, four or five feet from the ground. At the second thinning, when twelve, or fifteen feet high, they may be thinned to six, eight or ten feet apart, depending on whether they are solely for woodland purposes or for ornament; at this thinning they should be trimmed up seven or eight feet. After this a third thinning may take place or not, according to the use intended to be made of the groves; but as their growth is now more rapid than ever, as the wood and shades become denser the lower limbs will die of themselves, being deprived of light and sun. Every top is struggling to throw itself upward into the sun above its fellow, and each may be left to its own mastery. Besides, every one is now of some value, when cut away, and the experienced eye of the proprietor should guard against the slightest waste, or destruction not absolutely necessary.

If you have "help" in thinning your young woods, be very cautious *who* you employ. A regular woodsman hates a tree as he does *civilization* of any kind. He regards wood, of whatever kind, as made only to be cut and burned. That is *his* idea of "improvement." Have no such man about you, in *such* a labor; but rather one who loves trees, and has a taste for them, and knows enough to destroy only the bad, and spare the good. You can soon tell by an hour or two's work which to choose for your labor. If you live where woods are not plenty, keep no wild cherries, slippery-elms, sassafras or hickories. The first thing you know, the two first will be peeled down the trunks for their bark; the next will be dug up for its roots; and the last, as soon as it gets to the size of your leg, some rascally prowler will saw, or cut it down *in the night*, close to the roots, and take off three or four feet from the "butt" for an ax helve, and leave you to mourn over your beautiful little tree, while you might as well try to detect the identical hawk which has carried off your favorite chicken, as to detect the vagabond who did the mischief. The ax helves stolen from you have been trucked off, probably, at the first village grocery for a jug of whisky, and a plug or two of tobacco! We have grieved over so many of our darling and long cherished young hickories, elms and cherries, sacrificed to such vandal outrage that we have a thousand times wished in our hearts that not another one of either would grow on the farm! Even our white ashes, and white oaks are scarcely safe from depredation; but, as these are scarcely "ax helve" timber, they are safe; while spoke timber, and hoe handles are of less proportionate value, and usually made up by honest mechanics who get a living without pilfering.

LARGE ROOT CROPS.—At the Royal Dublin Society's Winter Exhibition of Farm Produce held on the 26th of November last, some extraordinary specimens of Turnips, Mangold's and Sugar-Beets were exhibited, many of them being over 30 pounds each—and averaging from 60 to 80 tons per acre. The White Sugar Beet is becoming quite a general crop for Winter fodder.

A beautiful expression is that of the child, who defined ice—"Water gone to sleep."

Sea Sand as a Manure.

The value of this article as a dressing for land, has not been sufficiently tested in this country. In the West of England a calcareous sand from the shore is a good deal used by the farmers living near tide water, for mixing with their stable manure. It is dragged for in Plymouth harbor, in three to six fathoms of water, put into large scows or barges, and taken up the creeks and rivers where it is wanted for use. In Summer, the barges frequently run on the sand bank in White Sand Bay, at two hours before low water; when the tide leaves them, they load, waiting for the flood to bring them off. For arable land the sand is thought to be best mixed with old earth or manure collected in the roads; but for pasture, it is best mixed with stable muck. The proportion is two loads of muck to one of sand.

The sea teems with animal life, not only fishes, but animalculæ too small for observation. It is not improbable that the sand and mud taken from its waters are strongly charged with animal matter, and that this is one source of their fertilizing influence. Sand banks are not unfrequently thickly peopled with clams, quahogs, muscles, scollops, and other shell fish. Broken fragments of other shells, are intimately mingled with the sand, and form a considerable part of its bulk. Both lime and animal matter must exist in these clam banks, to a considerable extent, and would form good material for the compost heap, or for top dressing clay, or muck lands.

A single instance of the use of sea sand, for dressing has come under our observation. A gentleman in one of our seaports had access to sand removed by a steam dredging machine from the harbor, for the purpose of deepening the channel. He carted several hundred loads upon a part of his garden, covering it two or three inches thick, and mixing it thoroughly with the soil. The result of the dressing was a great increase in its fertility. The yield of carrots, cabbage, squashes, and other vegetables, was enormous; and the pear trees, planted in this part of the garden, made wood very rapidly and produced the finest fruit.

Rice Culture in California.

The Stockton Republican announces that a number of Chinamen familiar with the culture of rice at home, have engaged to prepare lands for the culture of this cereal in that vicinity, and no doubt is expressed but it may be made a profitable branch of husbandry on the overflowed lands of that country.

FARMERS OF THE OLD SCHOOL.—ADAM was a farmer, while yet in Paradise, and after his fall was commanded to earn his bread by the sweat of his brow. JOB, the honest, upright and patient, was a farmer, and his stern endurance has passed into a proverb. SOCRATES was a farmer, and yet wedded to his calling, the glory of his immortal philosophy. CINCINNATUS, was a farmer, and one of the noblest of the Romans. BURNS was a farmer, and the muse found him at the plow and filled his soul with poetry. WASHINGTON was a farmer, and retired from the highest earthly station to enjoy a quiet rural life, and present to the world a spectacle of human greatness. One of his sayings we keep as a standing motto at the head of this journal, where it has stood for the last *sixteen years*.

A STRANGE ANIMAL.—A wealthy printer has been discovered in India. The British Zoological Society are making preparations to catch him.

Fig. 1—DRUMMOND PHLOX.

Flower Garden.

DRUMMOND PHLOX.—*Phlox Drummondii.*

This beautiful flower is of American origin. We have put it in our seed distribution (No. 51.), and we are happy to be able to present our readers with the above engraving of it, as it appears in full bloom. (As the seed is scarce and somewhat expensive and many applications are made for it, those sending to us will not be disappointed on receiving but small parcels. A few seeds, however, will form a pretty plot, and yield an abundance of seed for another year).—The plants grow low, (about one foot high), and spreading, and when grown in masses few or none are more showy. From the same seed several varieties of color are produced,

Fig. 2.—ANEMONE.

Sow in the open ground in this latitude at any time during May. Put in a good mellow soil, the seeds from six to twelve inches apart. If put six inches apart they will form a compact mass. Cover the seeds with about half an inch of soil. For a succession of bloom through the entire season, sow in Autumn in the Green or Hot House; start other seeds in the hot-bed in April, and sow in the open ground about the end of May. They are very fine for pot culture in the parlor or conservatory.

ANEMONE—See Fig. 2.

This is often called the "Wind-flower," perhaps from its slender waving stalk. It is a tuberous plant, or with roots like those of ginger, and propagated by division; perennial. It is very celebrated in many parts of Europe, but does not succeed so well here, though it has grown pretty well in some cool moist, but not very cold localities. The flowers are of various colors, and open early in Spring. Though very beautiful, we can not commend it highly for general cultivation, and we introduce the engraving mainly to give our readers an idea of the appearance of a flower, so often referred to by poets and other writers.

Gerarde, an ancient English cultivator thus describes the Anemone *pulsatilla*, in a work written more than 250 years ago. "It hath many small leaves, finely cut or jagged, like those of carrots, among which rise up naked stalkes, roughf, hairie, whereupon doe grow beautiful floures, bell-fashion, of a bright delaid purple color; in the bottom whereof groweth a tuft of yellow thrumbs, and in the middle of the thrumbs it thrusteth forth a small purple pointell. When the whole flower is passed, there succeedeth an head or knob, compact of many gray hairy lockes, and in the solid part of the knob lieth the seed, flat and heavy,—every seed having its own small haire hanging at it. The root is thicke and knobby, of a finger long, running right down, and therefore not unlike those of the Anemone, which it doth in all its other parts very notably resemble."

The poet Ovid relates that Venus, the goddess of love and beauty, formed a great attachment to Adonis, the son of Cinyras, King of Cypress. Adonis was fond of hunting, and received a mortal wound from the tusk of a wild boar. Venus lamented his death greatly, and changed the dying young man into the beautiful flower *Anemone*. The heathen poets had many fanciful notions as to the origin of beautiful plants.

NEMOPHILA—*maculata.*

This differs very little from the Nemophila *insignis* (No. 26 in our distribution list). They are both hardy annuals, originally wild flowers of California. The *maculata* is spotted instead of a uniform blue color. The flower stalks are single, and longer than the leaves. The *maculata* is a little larger than the *insignis*. It is a profuse bloomer, with deep violet dots near the tips of the corolla on a whitish ground color.

Fig. 3—NEMOPHILA

Sow in May in one foot rows, seeds six inches apart; cover ¼ inch deep in good soil.

Fig. 4—GOLDEN BARTONIA—*Bartonia aurea*

This plant (No. 36 on our distributing list) is well represented above. As already stated, it is a very showy yellow flower from California, which has contributed so largely to our stock of flowers, shrubs and trees during the past few years. Dr. Lindley, speaks of it thus: "It is only beneath the bright sunshine that its splended flowers unfold. In the early morning the plant is a shabby bush, with pale greenish grey branches, and weedy leaves: and so metalic is the luster of the inside of its petals that one would really think they must be composed of something more solid and enduring than the delicate and perishing tissue of a flower."

Sow in May, in a sunny situation, but sheltered from winds, as the branches are easily broken. A moderately rich, moist soil, fine and mellow, is the best. Transplant, or thin out into two feet rows, with plants one foot apart in the row.

SNOW DROP—*Galanthus nivalis.*

The Snow Drop is one of the earliest flowers of Spring, and we hear that in some localities it has mistaken the present mild weather and with the crocus, is appearing above ground. It frequently opens its petals during March, as if to rival the lingering snow bank with its whiteness. It is propagated by dividing the bulbs, and planting in Autumn. Bulbs that have been kept in a cool situation may still be put in the ground where it can be worked although they will not give as fine a bloom as those planted in October or November.

Fig. 5—SNOW DROP.

A GREAT QUESTION SOLVED.—"Where do all the pins go to?" This question, which has so long agitated the world, has at length been solved. It has been discovered that they fall to the earth, and become terra-pins!

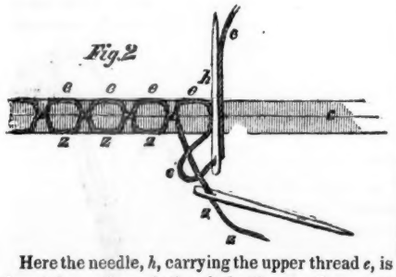
IN DOOR WORK.

How Sewing is Done by Machinery.

We are happy to be able to present our readers with some illustrations which, with the accompanying descriptions, will answer the question "*How* can a Machine make Stitches?" We are aware that it is not a little difficult to describe the inside works of a Sewing Machine, without havingthe Machine itself and the reader directly before us, but we will do the best we can with the aid of some engravings for which we think our friends will give us a little credit, when we tell them that the drawings below are principally of *our own* designing. We preferred doing the work ourselves, to letting the manufacturers do it, for we feared the whole matter would be so familiar to them that they would not appreciate the minute details necessary to make the subject plain to the unskillful reader.

We commence with the stitch made by the Wheeler & Wilson Machine, as that appears to be the simplest, and most easily illustrated. Fig. 1, exhibits two pieces of cloth, *c*, placed together and partly sewed. A little examination will show that the upper thread *e*, *e*, *e*, is crossed in the center of the cloth by the lower thread *z*, *z*, *z*—in other words the two threads cross each other and are thus locked together. This was essentially the 'lock stitch' invented, and patented in 1846, by Mr. Howe (to whom we are indebted for the first practical application of machinery to common sewing; and are glad that, unlike most inventors, he is reaping a rich reward, for though he makes no machines himself, yet the principal manufacturers of the successful Sewing Machines all pay him a license fee on each machine sold. So those ladies who buy them will have the satisfaction of knowing that some of the purchase money at least goes to the inventor himself.)

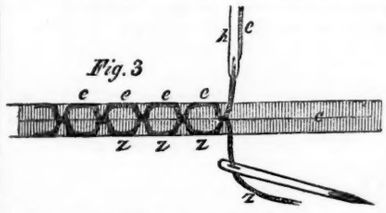
Fig. 2, is designed to illustrate how this stitch might be made by hand.



Here the needle, *h*, carrying the upper thread *e*, is thrust down through the cloth (the eye foremost) and partly drawn up again, thus forming a small loop of the upper thread. Through the loop thus made, a needle carrying the lower thread, *z*, is passed. (We are apparently sewing with the blunt end of the needle, but in practice we may suppose the *eye of the needle to be near the point*, which is the case in all Sewing Machine needles).

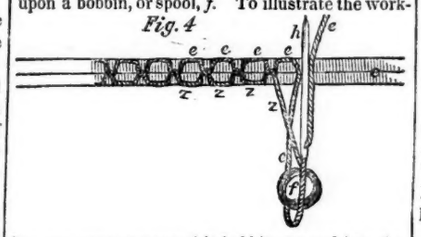
If we now withdraw the upper needle it will carry the lower thread into the center of the fabric, forming a complete lock stitch, as seen in Fig. 3

By continuing this process a series of stitches will be made; and since the upper thread enters and returns upward through the single needle hole, there will be upon the surface of the cloth a single line of thread exactly resembling ordinary "back stitching." We see also that the under-

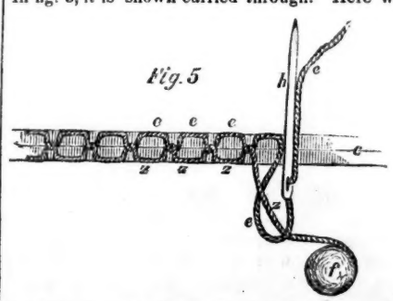


side of the cloth will present precisely the same appearance as the upper.

In the Machine invented by Mr. Howe, the upper needle was moved by machinery, and the lower thread was carried through the loop by means of a shuttle having within it a bobbin (or spool) of thread. This arrangement is still used in heavy Machines for leather and other thick fabrics, and in some of the "family Machines." The Wheeler & Wilson Machine is an improvement upon the shuttle, in several respects. It makes precisely the same stitch, but with less complicated machinery and less waste of power. We will try to explain its working to the readers of the *American Agriculturist*. Referring to fig. 4, we see the needle and upper thread, *e*, thrust down, just as in fig. 2. But in fig. 4, the lower thread, *z*, is wound upon a bobbin, or spool, *f*. To illustrate the work-

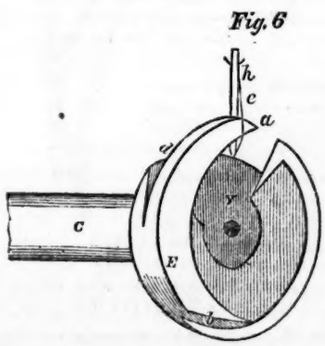


ing, we may suppose this bobbin passed into the loop between the needle *h*, and the upper thread *e*. In fig. 5, it is shown carried through. Here we



see that, on withdrawing the needle *h*, the upper thread will draw the lower one into the cloth, producing a lock-stitch in the centre of the fabric, precisely as in fig. 3.

By examining fig. 4 and fig. 5, it will be seen



that the same effect would have been produced, had the bobbin or spool, *f*, remained stationary, and the loop been carried around it—down the right side and up the left, around the lower thread *z*. This end is, in effect, accomplished in the machine.

In fig. 6 we have a rotary hook, *E*, upon the end of the shaft *C*. Inside of this hook, in the concavity *Y*, is placed the bobbin, *F* (as seen in fig. 8.) The needle, *h*, coming down through the cloth, and being partly withdrawn, leaves a loop at *e*. The point of the revolving hook passes into the loop at *a*, opens it, and carries it around, spreading it as it moves forward, so as to throw it around the bobbin or spool within the hollow hook The bobbin *F* (fig. 8) has no axis passing through it, but is held in the concavity *Y*, by a ring (not represented) placed before it, so that it plays freely and allows a loop of thread to pass around on both sides, as around the small ball of thread in figs. 4 and 5.

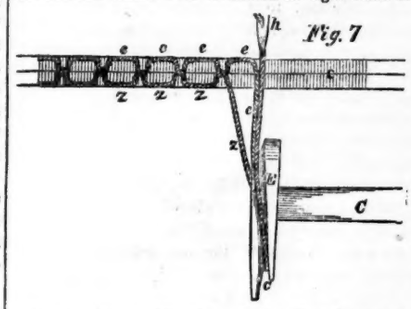
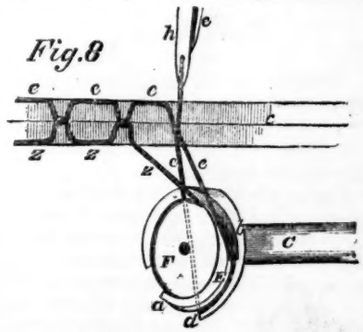


Fig. 7 gives a side view of the thread carried part way around. It will be noted that this wheel upon which the hook *a* (fig 6) is placed, is beveled at *E* in fig. 7, so as to throw the thread off from its edge after it has been partly wound around it The object of this, is to throw one part of the loop around the bobbin in order to embrace the lower thread.

The operation can be better understood in fig 8, by tracing the position of the upper thread *e*, *e*



and of the lower thread *z*, *z*. We observe that the loop having been first formed on the right side of the lower thread *z*, one part of it falls behind the bobbin *F*, (back of the dotted line,) while the other branch of it is caught by the hook, carried around, to be thrown off on the other side of the bobbin by means of the bevel or half screw at *b*.

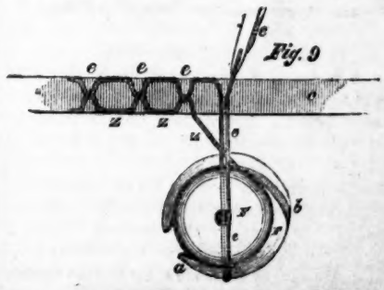


Fig. 9 gives a front view of the same. We here see the upper thread *e*, *e*, bent, or looped, com-

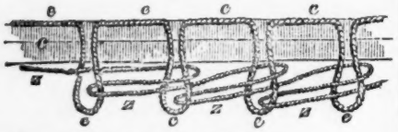
pletely around the lower thread *z*. A little further turning of the circular hook will throw the thread off from it, when, by the simultaneous tightening of the thread above, the lower thread embraced by it, will be drawn into the cloth and form a lock in the centre.

It is surprising to see with what rapidity these successive stitches can be made. A quick motion is communicated to the needle, circular hook, bobbin, &c., by turning a multyplying wheel, with a foot treadle. In ordinary work, eight hundred to a thousand stitches are easily made in one minute, and this, all day long; and there is scarcely a limit to the speed. (Think of that, ye who would see your wives, mothers, and daughters, continue bent over the hand needle, which can scarcely execute fifty stitches a minute, at best.)

We ommitted to say that the cloth is moved forward by a simple feed motion, making long or short stitches according to the will of the operator. An examination of the stitches will show that there is less thread used than is required in ordinary back-stitching, since in back-stitching, there is a double thread on part of each surface, while here, there is but one continuous thread.

We intended to further show, not only the kind of stitches, but also the mode of making them in the other varieties of machines, but we have not been able to complete the necessary drawings. We will, however, describe briefly the appearance

Fig. 10.



of the stitches in one or two of them.

In fig. 10, we have given, as nearly as we could, the form of the stitch made by the Grover and Baker machine, where the threads are purposely left loose, so that the course of each one can be traced. (It would be interesting, could we present at this time, drawings of the parts of the machine, by which the beautiful windings and interwindings of the threads is brought about.) A glance at the figure shows the course of the upper thread, *c*, *c*, *c*, and the lower one, *z*, *z*, *z*, the latter being smaller than the former.

Suppose we begin at the left hand, and bend down the upper thread through the cloth, to make a loop *c*. Next bend a loop of *z* through the upright loop, and carry this last horizontal loop forward, so that the second loop through the cloth can be brought down through it. Then hold the second loop of the upper thread open until the second loop of the lower thread is thrust through it, and carried forward, to be entered by the third loop of the upper thread. Continuing this operation gives the arrangement in fig. 10.

Fig. 11.

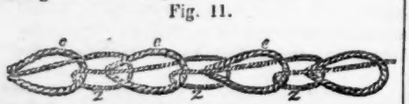
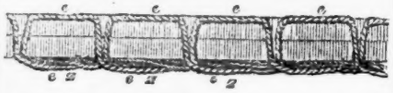


Fig. 11 shows these stitches left *loosely*, as they appear when looking upon the *under* surface of the cloth. The loop, or horseshoe, terminates abruptly upon the left of each. At this point the two ends pierce the cloth, as seen in figure 10 above.

In the next illustration (fig 12) we have the appearance of the cloth after being sewed, with the stitches drawn up by the machine in actual work. The cuts of course show the stitches magnified. When they are made short and the threads are properly tightened, we can only see a small continuous cord running along the under side of the cloth. It will be observed then, that of the two machines described, one makes the stitches on both sides of the cloth alike, the other gives a continuous stitch on the upper

Fig. 12.



side like ordinary back-stitching, with a small cord upon the under side. The Grover and Baker stitch can be unraveled, with a little care in getting hold of the two threads used. We do not see how the Wheeler and Wilson stitch can be unraveled at all. But in practice, it is next to impossible to rip a seam of half an inch sewed by either machine, even if the cloth be cut up into sections of that length.

Fig. 13.

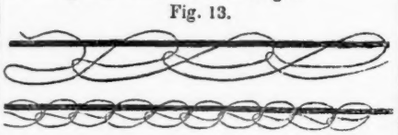


Fig. 13 illustrates the Tambour or chain stitch, made with a single thread. This is the kind used in the cheaper, or rather the lower priced machines. It will at once be seen that the stitch can be readily unraveled by taking hold of the thread at the left. There may be cases where sewing in this manner may be useful, but a glance at the stitch itself will show that it is not adapted to general sewing in a family.

Believing our readers to be deeply interested in this matter of sewing machines, we intend hereafter to present further illustrations, showing *how* the Grover and Baker stitches, represented in fig. 10, are made, and perhaps the same thing in regard to other machines. We shall be careful, however, not to let this matter trench so much upon our space hereafter, as to crowd out other departments of household labor which we have promised to discuss.

Selecting Flour.

The following directions for the selection of flour have been given by those long accustomed to dealing in this article. They are useful hints, though it requires some experience to select the best flour by the eye alone. We very seldom order home a barrel of flour until we have taken a baking from it and *tried* it, unless it be warranted by a reliable dealer of known good judgement.

The directions are: It must pack into a ball and not fall in powder, when a portion is pressed together in the hands. When a portion is thrown against a smooth *perpendicular* surface it must stick in a lump or at least not scatter in a fine powder. When a little of it is wet and kneaded, it should work dry and elastic, not soft and sticky. It should be of pure white, without a bluish tint. No minute black specks should be found on a close examination. A slight yellow or straw color is not a bad "sign."

Fond parent (to his son,)—"Yes, New-York is the place to get on in. Look at Jones; he started without a penny, and has lately failed for $150,000. Of course, that's an extreme case. I don't expect you to do so well as that. Still, with honesty and industry, I see no reason why you should not, in the course of a few years, fail for $50,000."

"Don't rob yourself," as the farmer said to the lawyer who called him hard names.

"I am so lame from the railroad crash of last week, I can hardly stand," said a limping, hobbling chap.—"Well, then, I hope you intend to sue for damages," said his friend.—"Damages! no, no; I have had damages enough by them; *if I sue for anything, it will be for repairs.*"

It was the saying of Sir Robert Peel, "I never knew a man to escape failure, in either body or mind, who worked seven days in the week."

Why are sheep the most dissipated and unfortunate of animals? Ans.—Because they gambol in their youth, frequent the turf, are very often blacklegs, and are universally fleeced.

Indemnity for the past—pay up. Security for the future—pay down.

A Little Girl in a Court of Justice.

Of the many excellent things written by our friend Samuel Hammond, formerly in the Albany Register and latterly in the Albany Express, we have read few narratives which have touched our own feelings more than the following, which recently appeared in the latter paper:

I witnessed a short time ago, in one of our higher courts, a beautiful illustration of the simplicity and power of truth. A little girl nine years of age, was offered as a witness against a prisoner who was on trial for a felony committed in her father's house. "Now, Emily," said the counsel for the prisoner, upon her being offered as a witness, "I desire to know if you understand the nature of an oath?" "I don't know what you mean," was the simple answer. "There, your Honor," said the counsel, addressing the court, "is anything further necessary to demonstrate the validity of an objection? This witness should be rejected. She does not comprehend the nature of an oath."

"Let us see," said the Judge. "Come here, my daughter." Assured by the kind tone and manner of the Judge, the child stepped toward him, and looked confidingly up in his face, with a calm, clear eye, and in a manner so artless and frank, that went strait to the heart. "Did you ever take an oath?" inquired the Judge. The little girl stepped back with a look of horror, and the red blood mantled in a blush all over her face and neck, as she answered, "no sir." She thought he intended to inquire if she had ever blasphemed.

"I do not mean that," said the Judge, who saw her mistake, "I mean were you ever a witness before." "No sir," I never was in court before," was the answer. He handed her the Bible open. "Do you know that book, my daughter? She looked at it and answered, "Yes sir, it is the Bible." "Do you ever read it?" he asked. "Yes sir, every evening." "Can you tell me what the Bible is," inquired the judge. "It is the word of the great God," she answered. "Well place your hand upon this Bible, and listen to what I say," and he repeated slowly and solemnly the oath usually administered to witnesses. "Now," said the Judge, "you have sworn as a witness, will you tell me what will befall you if you do not tell the truth?" "I shall be shut up in the State Prison," answered the child. "Anything else?" asked the Judge. I shall never go to heaven," she replied.

"How do you know this?" asked the Judge again. The child took the Bible, and turning rapidly to the chapter containing the Commandments, pointed to the injuction, "Thou shalt not bear false witness against thy neighbor." "I learned that, before I could read." Has any one talked with you about your being a witness in court here against this man?" inquired the Judge. "Yes, sir," she replied. "My mother heard they wanted me to be a witness, and last night she called me to her room and asked me to tell her the Ten Commandments, and then we kneeled down together, and she prayed that I might understand how wicked it was to bear false witness against my neighbor, and that God would help me a little child to tell the truth as it was before him. And when I came up here with father, she kissed me, and told me to remember the ninth commandment and that God would hear every word that I said.

"Do you believe this?" asked the Judge, while a tear glistered in his eye and his lip quivered with emotion "Yes, sir," said the child, with a voice and manner that showed her conviction of its truth was perfect. "God bless you, my child," said the Judge, "you have a good mother. This witness is competent," he continued. "Were I on trial for my life, and innocent of the charge against me, I would pray God for such witnesses as this. Let her be examined."

She told her story with the simplicity of a child, as she was, but there was a directness about it which carried

conviction of its truth to every heart. She was rigidly cross-examined. The counsel plied her with infinite and ingenious questioning, but she varied from her first statement in nothing. The truth as spoken by that little child was sublime. Falsehood and perjury had preceded her testimony. The prisoner had entrenched himself in lies, until he deemed himself impregnable. Witnesses had falsified facts in his favor, and villany had manufactured, for a supposed clear acquittal. But before her testimony, falsehood scattered like chaff. The little child, for whom a mother had prayed for strength to be given her to speak the truth as it was before God, broke the cunning devices of matured villany to pieces like a potter's vessel. The strength that her mother prayed for was given her, and the sublime and terrible simplicity (terrible I mean to the prisoner and his associates) with which she spoke, was like a revelation from God himself.

Boys' and Girls' Own Columns.

Work for Winter Evenings—Use of Letters.

By *letters*, we do not mean communications sent through the Post Office, but only the little things of which words are made. There are only twenty-six of them, but they can be made to accomplish a great deal, and to afford no little pleasure. They are of no service, however, to one who does not know how to use them. Learning to spell is rather dull business; and yet, to spell correctly is a most desirable, though rare accomplishment. But something can be done to make it pleasant, and we are going to propose a plan that will be found very useful, even to those who feel above resorting to the spelling-book.

To begin with, all that is needed is a large number of cards, about half an inch square, each containing a letter of the alphabet. Those who live near a printing-office can get a few alphabets printed at a cheap rate, and those who do not can make the letters with a pencil, on cards, or even on pieces of paper.

And what then? Let two persons—or a dozen if they like to—sit down at the table, with the pile of cards before them, and each one choose some word with which to puzzle his neighbor. Then he must carefully select all the letters of which the word is composed, from the pile before him, and pass them along to the other, who is to arrange them in proper order, *if he can*.

We have said enough to make the plan understood. It seems a very simple thing; but we will assure our young readers that if they will try it, they will take a great deal of pleasure in it. And if there are grown up persons in the room, they will be very apt to try their skill too.

We add a few hints that are in place. 1. Great care must be taken that the letters are properly selected; the right ones; not too many, nor too few.

2. The person to whom they are given should arrange them correctly, so as to spell the word intended; not making such an error, *e. g.*, to put *e* before *i* in the word *piece*.

3. It will usually be found, that words of from four to nine letters are sufficiently puzzling, without resorting to the longest contained in the dictionary.

4. It may be agreed at any time, to limit the words to some particular class; as to *nouns*, or *verbs*, or *animals*, or the names of *objects in the room*, &c.

5. Sometimes it will be found, that the letters composing one word will also spell a very different one—as *acts*, *cats*, *cast*.

6. Usually, those words will be found most difficult, which have a diphthong, or some silent letter, as reign, or knight; or several consonants with a single vowel, as *strength*, or *shrubs*, or *trench*; or the same letter many times repeated, as *scissors*, *cocoon*.

7. Some persons have a natural tact for solving such questions; others find it more difficult. Something depends on a knowledge of words, and of their terminations. So many words end in *tion*, that the occurrence of those four letters would lead one to pronounce that, the last syllable of the word; yet those letters are also to be found in the word *notice*, *tonic*, and others. No complete rule can be furnished. The brightest, quickest minds will succeed best.

"The Best Miss it Sometimes."

A New-Hampshire boy writes:

"At the time of renewing my subscription for the 'Agriculturist,' I sent to you an answer to Problem No. 12. But on receiving the January No. I was greatly surprised to find the answer there given not agreeing with the one which I sent, as I knew I had wrought it on correct principles. However, to be certain of the matter, I carefully revised the process, and found that I had made a mistake each time I had previously worked it. Thus you see the best miss it sometimes."

How Pictures are Made.

A "little girl" writes, that she was much interested in our description of stereotyping, in last volume, and she wishes we would tell her, and others, something about how pictures are made. We cheerfully comply, though we are very busy now, and our room is much crowded by an unusual number of very good, but far too long articles, in the preceding pages.

PAINTINGS.

There are several kinds of pictures. First, we will name paintings. Some of these are made with paints mixed in oil. These are called "oil paintings," and are usually upon canvas—that is cloth stretched upon a frame. Paintings in water colors are those, generally made on paper, with the paints mixed in water instead of oil. These would be spoiled by wetting, which is not the case with oil paintings, as they can usually be washed, if it be done carefully.

There are lithograph pictures, daguerreotypes, photographs, crayons, &c., &c., but we cannot stop to tell you all about them now. It would take several pages to do it. We will at this time speak only of the pictures in this paper, which are called

ENGRAVINGS.

We shall ask Mr. Orr to talk to you hereafter on this topic, and give some illustrations. But while waiting for him we will say a word or two. Examine carefully the following picture, which is called

A SHADOW.

You will see that it is made only of little black marks put upon the paper. In the darker portions there are more of these marks than upon the lighter parts. It was made thus:

First, the person conceiving the idea of such a picture, with a pencil puts upon paper just such marks as you here see, and you will notice that there are hundreds of them. Two or three different marks—a little longer or shorter, heavier or lighter, in any part of it, would have spoiled the appearance of the whole. When the picture was complete, an artist took a block of wood, sawn from the end of a hard boxwood tree, just one inch through. One end of this was made very smooth, and whitened with a little paint; and on this smooth end, he made with a pencil an exact copy of the first picture on paper, but turned the figures all round, from left to right, so that when the block was turned over upon this page, the marks would come right again, as here seen.

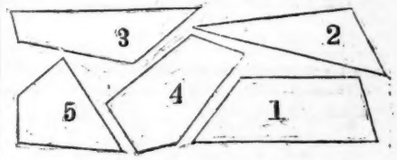
This done, our *Engraver* took the block, and with small sharp chisels and gouges, cut away all the wood where there were no marks. He had to work long, patiently, and carefully, for had his graver or tool slipped once, it would have clipped off some point that should have been left. As the marks are very small, the engraver usually places a magnifying glass on a frame between his eye and the block he is cutting. This makes the lines look larger, and he can work around them better, though he must keep his hand very steady. We forget, it was not *his* hand, but *her* hand, for this picture chanced to be engraved by a *lady*. You can readily imagine that it took long and patient work to make even this one small picture, for there are, as we have before said, many hundreds of points and lines where the wood was left uncut. How much work do you think it takes to cut all the pictures that are printed from month to month in the *Agriculturist*, for they are all made just as we have described for this one. Will you not look at them all with more interest hereafter, now that you know how much work it is to make even a single one? Just look at the many engravings, flowers, and trees, and see the fine lines, and think how carefully the engraver must work to leave so many points and lines "sticking up" on the surface of the block, and make them all "back-handed" too, so that they will print right when turned over upon paper.

When the block is all ready, the printer, or as we call him, the *pressman*, sets it on the printing press and runs an inked roller on it. The roller leaves a little ink on each point of wood left by the engraver. A sheet of paper is then laid on and a heavy pressure put upon it, which makes the paper pick up the ink, and thus is formed the picture, made entirely of diminutive ink marks. If we find the picture or impression, or *proof* as we call it, all right, we then hand the block over to our type setters, ("compositors" we call them,) and they set it in the page with the types or letters arranged, above and below and around it. This done, the page is ready to be printed from, though, as we have before described, we first get a plaster mold from the page—types, pictures, and all, and by casting into this mold some melted type metal we get a solid thin stereotype plate, having upon one side of it, just the projecting surfaces necessary to leave the ink on every spot you see on the page. Those plates we keep using them for extra editions whenever needed. The type is taken to pieces again for a new page, and the wooden blocks, or wood engravings are stored away, or perhaps loaned to a brother editor who does not wish to or can not be at the trouble and expense of getting up pictures. Sometimes these blocks or stereotype copies of them, are sent away over the ocean, to be used there, while we keep the stereotype *fac similes* in our plates.

There now, after all our trying, we have used a word that you may not understand. "*Fac simile*"—what does that mean? Get down that big Dictionary—all that have *earned* one. For others who have not got it yet, we'll say: *Fac*, means made, and *simile* means just like. So *fac simile* means, made just like, or an exact copy.

New Problems.

PROB. 24—To arrange the following five pieces into a perfect *hexagon*—that is, a figure having six equal sides.



PROB. 25—Contributed by George H. Gilbert, Cheshire Co., N. H.—A gentleman gave to each of his sons a garden. John's garden was circular; James' was a rectangle, or square. The ground was worth 3 cents per square foot, and the price of each garden in 3-cent coins just inclosed it—the coins being taken at 1-2 inch in diameter each. What was the size and value of each garden?

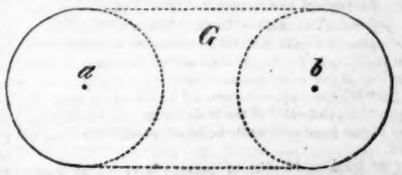
PROB. 26—A farmer in plowing a square field containing ten acres, went round the whole field, cutting a furrow ten inches wide, and continued thus until he finished at the center. Question 1st—How many miles did he travel. Question 2d—How many "bouts" did he make? ....This problem has been discussed for some time by a "crowd of boys" at Henry, Marshall Co., Ill. One of them has sent us their answer, which we will keep until we hear from some of the rest of our large family of boys and girls.

Answers to Problems.

PROB. 12—We add to the small list of correct answerers of the difficult problem 12, the name of O. W. D., of Great Falls, New-Hampshire, who, though he modestly suppresses his own full name, justly thinks the "Granite State" should have credit for mathematical skill and ingenuity alongside of New-Jersey and Pennsylvania. We are happy to accord due credit, not only to the Granite State in general, but to Great Falls in particular, for to that single Post Office we send some *forty* copies of the *Agriculturist*. Are not they a reading people?

PROB 13—Additional answers received from J. Morgan, and from E. C. Selleck, Marion Co., Ill.

PROB. 22—Q.—What will it cost to pave the space *G* between the two circular flower beds below, with gravel, at 12 cents per square yard? The distance from *a* to *b* is 20 feet, and the circles 12 feet in diameter.

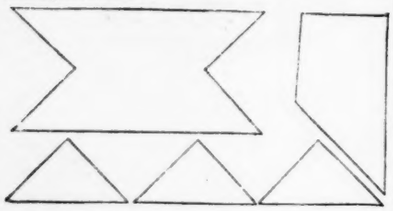


Ans.—$1 69 and 2 mills.

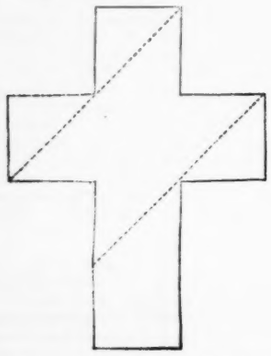
Up to this date, (Jan. 18), answers like the above have been received from Nathan Blakeslee, Oakland Co.

Mich; Charles C. Watson, Gibson Co., Ind.; Simon Emrich, Butler Co., O.; John F. Miles, Erie Co., Pa.; R. C. Fulton, Westmoreland Co., Pa.; P. E. Miller, Frederic Co., Md.; F. A. Bliss, Bristol Co., Mass.; Jefferson Booth, Sciota Co., O.; E. Maurhoff, Butler Co., Pa., (very pretty): G. H. La Fetra, Clinton Co., O.; Jonathan Bonsall, Columbiana Co., O.; Abraham Myers, Ogle Co., Ill.; Daniel M. White, Blair Co., Pa.; David Brown, Ohio Co., Va.; Jacob Datesman, jr., Northampton Co., Pa.; Samuel Strong, Dutchess Co., N. Y.; S. E. Brown, Monroe Co., N. Y.; E. C. Selleck, Warren Co., Ill.; G. P. Dorr, Washtenaw Co., Mich.; Frederick Clapp, Kings Co., N. Y.; Mont. B. Cowperthwait, Brooklyn, N. Y.; W. M. Clark, Guernsey Co., O.; O. W. D., Great Falls, N. H.; L. A. Ford, Marshall Co., Ill.; Cyrus K. McKee, Armstrong Co., Pa.

PROB. 23.—To put the following pieces together, so as to form a perfect cross.



The following is the arrangement:



Answers substantially in this form have been received from: Purington Maryott, Tioga Co., Pa.; Wm. Chard, Waukesha Co., Wis.; Charles C. Waters, Gibson Co., Ind.; Wm. F. Law, Cumberland Co., Pa.; R. G. Adams, L., Mass.; A. B. Huffman, Hunterdon Co., N. J.; H. D. of N. J.; John Bridgeman, Genuga Co., O.; J. U. S., Crawford Co., Wis.; G. H. La Fetra, Clinton Co., O.; C. H. D., Chemung Co., N. Y.; Julia Butler, Worcester Co., Mass.; Cyrus K. McKee, Armstrong Co., Pa.; David Brown, Ohio Co., Va.; Jasper N. Lantz; L. A. Ford, Marshall Co., Ill. ("representing a crowd of boys"), Jacob Datesman, Jr., Northampton Co., Pa.; G. H. Ireland, Middlesex Co., Mass.; J. C. B., Oneida Co., N. Y.; Samuel Strong, Dutchess Co., N. Y.; G. P. Dorr, Washtenaw Co., Mich.; Frederick Clapp, Kings Co., N. Y.; B. H. Brown, New Haven Co., Conn.; Susannie, Kings Co., N. Y.; Peter S. Baylor, Hunterdon Co., N. J.; O. W. D., Great Falls, N. H.

The next six will see they united their pieces so as to form a cross, but differing from the model we now present: Abraham Myers, Ogle Co., Ill.; E. C. Selleck, Warren Co., Ill.; J. F. Williams, Fairfield Co, Conn.; C. H. Franklin, Kings Co., N. Y.; Samuel Gillard, Erie Co, Ohio; Jefferson Booth, Sciota Co., Ohio

Note on the Seed Distribution.

We republish the list of seeds offered, with slight corrections. No. 22, Mammoth Squash, is changed to Boston Marrow Squash—a very valuable variety—having been disappointed in getting the Mammoth Squash seed.

Very few seeds have yet been mailed. Several varieties from Europe are just in port, and it will take some days to get them through the Custom House and put up in packages. We shall scarcely overtake the demand before the middle of March. Sometimes persons will receive one kind at one time, and another at a subsequent date.

☞ We must again request all applicants to read the entire "regulations" of the Distribution and *follow* them. Our clerks have been sadly bothered already for want of this.

☞ Quite a number of persons have added single *penny* stamps for packages marked "one third of a 3-cent stamp." It should be understood that these penny stamps are valueless unless there be three of them together, letter postage being always rated by 3-cent stamps. We name ⅓ stamps to indicate that three such packages can go in one letter under one 3-cent stamp.

☞ An ordinary envelope will contain as many seeds of any kind as will go under two 3-cent stamps.

African Imphee.

Notwithstanding the unfavorable reports of this variety of sugar cane, several persons indulge in strong hopes that it may prove superior to the Chinese variety (Sorghum). To gratify any desiring to experiment with it we have procured a small quantity, and placed it in our seed distribution, No. 52. Only small parcels of 100 to 200 seeds each will be furnished.

King Philip Corn Wanted.

Many are inquiring where they can get this by the quantity for seed. Those who have it to sell should advertise the fact, stating amount, price, and guarantee of its purity.

Wyandott Corn.

Frequent applications are made to us. We have none to distribute. We have no faith in it for northern latitudes. South of say 39° it may be all that is claimed for it, for aught we know.

Thanks to Contributors and Correspondents.

Never before in our Editorial experience have we been favored with such an avalanche of communications, queries, suggestions, &c. We have a mountain pile of letters which we shall work over during the year, for we intend to let nothing go ungleaned—save the "sugar cane reports," which it would be utterly impossible to use in detail without publishing an extra sheet of 100 pages monthly for a year.

We feel decidedly "rich" with such a store of material in all departments of soil culture as has been kindly contributed, but we will be able to use it all in due time, with as much more as our friends will supply. One hint, however. Don't forget the In-Door Department, which has been too much neglected in all time past. Our "better halves" are entitled to at least some consideration in the efforts now making to lighten and facilitate human toil.

Permit us to earnestly beg of our correspondents and contributors to write briefly and to the point. Dip right into the subject at once. Give the pith of the matter and stop. Long introductions and perorations are best omitted. If a whole page of description can be thrown into an illustration, make a rough penciling and we will have it completed and engraved. Large as is our paper, we have no room for a sentence that does not convey a thought useful to somebody.

"Our Basket" is full, pressed down, and running over. We shall "empty" a few columns into our next number. There is not an inch of room left in this one.

Subscription Still in Order.

We can supply all subscribers that may come, with the first two numbers of this volume, and new subscribers with the baker's dozen when especially desired and *so stated*. We hope our friends will continue to aid us by sending forward new names. We shall this year, at least, spend every dollar received for this paper in improving its character, enriching it with beautiful engravings, valuable contributions, &c. Cannot every one sending in for seeds forward at the same time one or more new subscribers? The "times," though improving, are still hard, but will not the small price of a single or club subscription for the present volume be well expended?

The Banks Good.

There is such a decided improvement in the Exchanges, and in the consequent value of even the most distant bank bills, that we shall henceforth freely receive in payment for subscriptions the issues of any bank in good credit at home. Gold, or 3-cent stamps, or Eastern bills, are of course preferable, but not indispensable.

The Past—The Present.

The beautiful engraving on page 61, while designed to show what the Sewing Machine will do for the In-door has two or three other points of interest that may be overlooked. In the upper outside corners will be noticed the Courier on horseback racing with the snail at his feet, contrasted with the Rail-cars, the telegraph wire, and with the flash of lightning from the cloud. Below, the Canoe and the Steamboat are presented. On the inner corners are the Mowing Machine vs. the Scythe, and the Printing Press vs. the Pen. The whole picture is a beautiful one, worthy of study. The object that most struck our attention is the clock marking five minutes to twelve,—the candle indicating it to be night—and yet the wearied mother is still at the everlasting "Stitch, stitch, stitch," while the little one is kept up to an unseasonable hour to "rock the cradle."

The Prize Dictionaries.

Are being constantly called for, but the publishers tell us they can supply "any number," and *we* shall be ready to meet all drafts from subscribers entitled to them. **Remember**, that by running your list of names up to only *forty*, at the club rates, you secure the large unabridged Webster's Dictionary, containing 1,400 pages, of three columns each, giving a full meaning to every word in the English language. This Book should be second only to the Bible in *every* family. It will cost you $6 or $7 to buy it; but we present one to every subscriber obtaining forty names, at 60 cents each—whether at one or at different Post Offices. The offer will hold good until further notice.

Business Notices.

☞ *Fifty Cents a Line.*

☞ **Wheeler & Wilson Manufact'g Co.'s**
FAMILY SEWING MACHINES,
OFFICE, No. 343 BROADWAY,

Agencies in all of the principal places in the United States.

Highest Premiums again awarded by the American Institute, New-York; Maryland Institute, Baltimore; and at the Maine, Connecticut and Illinois State Fairs.

"We prefer the Wheeler & Wilson Sewing Machine for family use."—*N. Y. Tribune.*

"Wheeler & Wilson's Machines are the favorites for families."—*N. Y. Times.*

"The Wheeler & Wilson Machine has secured and justly maintains the pre-eminence for sewing every kind of material."—*N. Y. Express.*

"There is not an invention of this inventive age that honors American genius more than the Sewing Machine. No family ought to be without its benefits"—*Independent.*

"We use in our own family one of the Wheeler & Wilson Machines, and we can not imagine anything more perfect."—*Ed. N. Y. Evangelist*

"A Sewing Machine is among the most useful and economical articles a housekeeper can purchase. In looking out for the BEST, see the machines of Wheeler & Wilson."—*Examiner.*

"Wheeler & Wilson is the machine *par excellence* for family use, and we recommend it most emphatically."—*Advocate and Journal.*

"Wheeler & Wilson's Sewing Machines combine every thing that can be required in the manufacture of garments. Our friends abroad may be assured that to purchase one of them is a safe investment."—*Observer.*

"Wheeler & Wilson is beyond all question THE machine for family use."—*Life Illustrated.*

SEND FOR A CIRCULAR.

HARROW AND CLOD CUTTER.

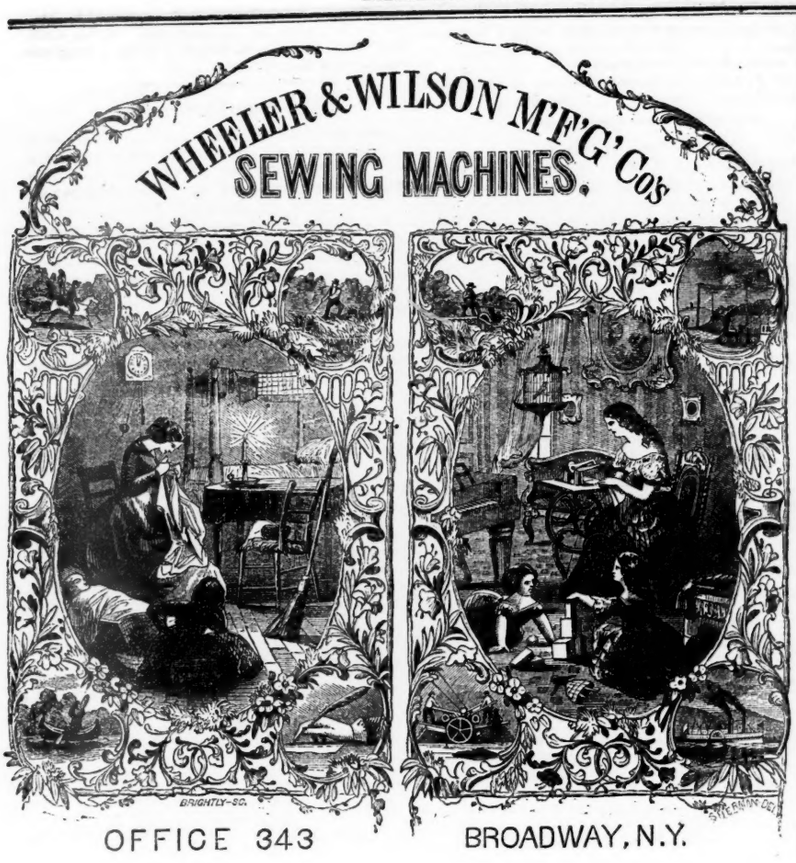
This is a highly useful and valuable Farm implement, for preparing sod-lands for corn, or to reduce cloddy lands to proper tilth for seeding oats, wheat or rye.

This Harrow drew a premium at the last State Fair, for the best harrow and harrowing.

Farmers who may want an important improvement for the harrowing of rough and cloddy ground, will do well to call and examine this patent Harrow and Clod-Cutter

Manufactured by J. WINEBRENNER & CO., Harrisburg, Pa.

Sold also by P. MORRIS & CO., Philadelphia; and by J. WARDRUP, Pittsburg, Pa.



The following gem by a poet of the finest genius, is a worthy tribute to the most humane invention of the age:

THE SEAMSTRESS'S VISION.

'Twas midnight!—Haggard and wan,
A widowed seamstress drooped in her chair:
Her candle was dying, her fire was gone,
And her hands were clasped in despair.
"Oh God! I am weary," she cried,
"Of a labor that never is done;
'Twere better for me had I died
Ere the pauperish task was begun."

She sat and thought of the days
Of her childhood, all sunny and fair,
Ere the dimness came over her eyes,
And the silver was streaked in her hair:
She thought of her children—the dear,
Of husband and parents—the dead;
"Why struggle with beggary here;
Why live we thus orphaned?" she said.

Exhausted, and sickened, and sore,
She sat at her slavish toil:
Oh life! is there nought in thy store,
But anguish, and hunger, and moil?
Nothing but stitch at an endless seam,
With palsied hand and dimming eye,—
Is this the measure of life's young dream?
'Twere better to starve and die.

She sat, and her aching head drooped low,
With its burthen of grief and pain;
A burthen none but the toiling know,
Whose rest is dreaming of toil again.
Her fingers relaxed and her eyes grew dim,
And her task faded out of her sight,—
No fire on the hearth, no candle to trim,
Nothing left but a Vision of night.

A Vision—for lo! she dreamed,
Aye, dreamed she was happy and free:
No longer her fingers wearily seamed
Till her swollen eyes scarcely could see.
A needle she held, and she thought it grew
To a fair and flowering tree;
Each flower a garment finished and new,
And fair as a garment could be.

O wondrous Vision!—the needle seemed,
As if thousands of fairy hands
From out its flowering branches gleamed,
Stitching hems, and gussets, and bands;
So noiselessly stitched that never a sound
By the sleeper's ear was heard;
And the garments dropped like ripened fruit,
Which never a wind had stirred.

O wondrous Vision!—her heart was glad,
And throbbed with rapture, to see
The myriad human multitude clad,
By the flowering needle-tree:
All bravely clad, in robes unstained
With woman's sweat and tears;
For woman, henceforth, no longer sat
A slave to needle and shears.

O wondrous Vision!—woman restored
To a share of her own birth-right,
To be the co-mate of her husband-lord,
And in labor to find delight:
In a labor that slaves not heart and hand,
Nor robs the eye of its light;
But loving toil for the dear home-band,
That bringeth sweet sleep at night.

O wondrous Vision!—an hour repaid
For years of struggle and toil,
For stinted wages, and dearth of bread,
And pain, and hunger, and moil.
"For oh! nevermore," the sleeper said,
"Shall woman a slave be bound;
Her blessed freedom from stitch, stitch, stitch,
In the Sewing Machine is found."

The Sewing Machine!—O that was the tree,
The seamstress saw in her dream:
Her needle a-flowered, by fairy hands,
Wrought gusset, and band, and seam.
No "Woman sat in unwomanly rags,"
Plying the glistening steel;
But the labor of many by one was wrought
With pleasure, for human weal.

Enraptured, with joy she awoke
As her cheek caught the sun's first gleam,
And O!—double rapture—to find
Her vision was not all a dream:
For some angel of mercy had come,
In the hours of her slumber unseen,
And placed by her desolate hearth,
Her Freedom! a Sewing Machine.

"O blessings," she cried, "on the brain,
For woman's dear sake, that thought it;
O blessings," she cried, "on the hands,
For woman's dear sake, that wrought it:
And blessed, thrice blessed *their names*,
God's blessing, they surely have won it,"
As "Wheeler and Wilson" she read,
In letters of gold written on it.

Business Notices.

☞ *Fifty Cents a Line.*

The above engraving illustrates the operations of one of Grover & Baker's Sewing Machines, as managed by a lady. The Machines are unquestionably the best in the market for family use. This is attested by the experience of upwards of five thousand families, of the highest respectability, in all parts of the United States. No well regulated family can afford to do without one.

The following, from the Secretary of a benevolent institution is only one of many of a similar character, received by the manufacturer:

To Messrs. Grover & Baker:

New-York, Oct 26th, 1857.

The managers of the "Female Magdalene Benevolent Association" take pleasure in bearing testimony to the great utility and efficiency of "Grover & Baker's Sewing Machines," which, for the past year, they have had in use in the sewing room of their Asylum, and they most cheerfully recommend it to those families who wish greatly to diminish labor and facilitate its successful and useful results,

On behalf of the F. M. B. Society.

A. L M., Secretary.

Editors of newspapers, too, have some appreciation of their merits, as the following opinion will show:

N. P. Willis, Esq., Editor of the *Home Journal* of November 7, comparing this with others, says: "The use of this machine, in the first place, is easier learned. Then the stitch is more elastic and much stronger for woolen cloths. It finishes off its own work, which the others do not. The work can be ripped and re-sewed, and does not rip of itself, without its being intended, though every third stitch be cut. The same machine runs silk, linen thread, and common spool cotton, with equal facility; and a very material advantage is that it sews from ordinary spools, not making it necessary, as in the other machines, that the cotton should first be respooled. Its construction is simpler and stronger."

"The Grover & Baker machines are, *we believe*, superior to any others."—*Boston Daily Advertiser.*

"From the best information we have been able to obtain as well as from careful examination of the work done with different machines, we are led to give the preference to Grover & Baker's. The fineness and beauty of the stitch made by these machines is unsurpassed, and as to the liability of the work to rip, it is out of the question."—*American Baptist.*

The reader is invited to call and examine them at 495 Broadway, N. Y.; 18 Summer street, Boston; or at 730 Chestnut street, Philadelphia.

Market Review, Weather Notes, &c.

American Agriculturist Office,
New-York, Jan. 25, 1858.

The Wholesale Produce Markets have exhibited very few changes of any importance since the date of our last Review. The weather has been remarkably mild, and has not hindered operations. The accounts from Europe have, on the whole, been more encouraging for our trade. The Money Market has recovered from much of the depression caused by the panic, and embarrassments of the Autumn and Fall seasons. The City Banks have been steadily increasing their supplies of specie, until they now hold in reserve some $30,000,000—an amount wholly unprecedented in the history of New York banking. Yet, with all these circumstances in favor of some revival in business, Trade has been quite backward—buyers purchasing only such supplies of the various articles as they really required, avoiding every movement of a speculative character. The Breadstuff Trade has not been a vigorous one. The receipts have not quite equalled the sales; but, as the annexed Tables show, we began the month,

with unusually large stocks, especially of Flour and Wheat, no great difficulty has been experienced by buyers in having their orders filled. The demand has been mostly for the home trade, but towards the close, exporters have manifested more willingness to purchase. Prices have fluctuated slightly—closing, however, without indicating any very serious difference, compared with the current rates at the date of our last review. The supplies of Flour and Wheat, are large—but Corn is not abundant. The bulk of the sales of Corn have been made up of the new crop of Jersey and Southern. The receipts have been in better condition, and to this circumstance much of the improvement in prices of new Corn is to be ascribed. Rye, Barley and Oats, have been in moderate supply, and limited request, chiefly for home use....Cotton has been in better demand at advanced prices. This improvement is mainly due to a singularly rapid revival of confidence on the part of Southern holders, who have still control of the great bulk of the crop.....Provisions have fluctuated....Pork closes heavily....Groceries have been in excess, and tend downward....Sugars and Molasses, have declined considerably....African Hemp has been more sought, but at reduced rates....Hops have been moderately inquired for....Grass Seeds have been more freely dealt in, at quoted rates. ..Tobacco in pretty brisk request, but at easier prices....Wool remains dull and heavy....Other articles of produce have been moderately dealt in.

CURRENT WHOLESALE PRICES.

	Dec. 23.	Jan. 25.
FLOUR—Com'n to Extra State	$4 15 @ 4 65	$4 25 @ 4 60
Common to Fancy Western	4 15 @ 4 65	4 25 @ 4 50
Extra Western	4 40 @ 7 50	4 45 @ 8 00
Fancy to Extra Genesee	4 75 @ 7 50	4 35 @ 7 00
Mixed to Extra Southern	4 70 @ 7 25	4 50 @ 8 00
RYE FLOUR—Fine and Super.	3 00 @ 4 25	3 00 @ 4 00
CORN MEAL	3 25 @ 3 70	3 00 @ 3 50
WHEAT—Canada White	1 10 @ 1 30	1 10 @ 1 25
Western White	1 10 @ 1 42½	1 10 @ 1 35
Southern White	1 15 @ 1 40	1 15 @ 1 38
All kinds of Red	90 @ 1 20	1 00 @ 1 20
CORN—Mixed, old	68 @	72 @ 73
Yellow, new	55 @ 65	65 @ 67
White new	55 @ 65	67 @ 70
OATS—Western	45 @ 47	43 @ 46
State	42 @ 45	42 @ 45
Southern &c.	30 @ 38	28 @ 38
RYE	70 @	69 @ 72
BARLEY	65 @ 80	68 @ 75
White Beans	1 50 @	1 37½ @ 1 40
Black eyed Peas, per 2 bush	2 75 @ 3 00	3 12½ @
HAY, in bales, per 100 lbs	50 @ 75	55 @ 75
COTTON—Middlings, per lb	10¾ @ 10¾	10½ @ 10¾
RICE, per 100 lbs	2 75 @ 3 62½	2 75 @ 3 37½
HOPS, per lb	5 @ 9	5 @ 10
PORK—Mess, per bbl	15 50 @16 00	14 65 @
Prime, per bbl	13 50 @13 60	11 50 @11 75
BEEF—Repacked Mess	10 00 @12 00	10 00 @12 50
Country mess	9 00 @ 9 75	9 00 @10 00
" prime	5 75 @ 6 50	6 00 @ 7 00
Hogs, Dressed, per lb	6¼ @ 6¾	6¼ @ 6¾
Lard, in bbls. per lb	9¼ @ 9¾	8¾ @ 9¼
BUTTER—Western, per lb	10 @ 16	11 @ 15
State, per lb	13 @ 24	12 @ 23
CHEESE, per lb	6 @ 8	6 @ 8
FEATHERS, Live Geese per lb.	38 @ 43	38 @ 42
SEED—Clover, per lb	9¾ @ 10	8¾ @ 9
Timothy, pressed, per bushel	2 @	1 75 @ 2 00
Timothy, reaped, per bushel	2 50 @	2 00 @ 2 25
FLAX, Am. rough, per bush	1 20 @ 1 25	@ 1 20
SUGAR, Brown, per lb	5¼ @ 8¾	4 @ 7¾
MOLASSES, New-Orleans, prgl	33 @ 35	25 @ 27
COFFEE, Rio, per lb	8¾ @ 10¾	8 @ 10¾
TOBACCO—Kentucky, &c. pr lb	7 @ 18	6¾ @ 18
Seed Leaf, per lb	10 @ 35	9 @ 35
WOOL-Domestic fleece, per lb.	27 @ 45	27 @ 45
Domestic, pulled, per lb	20 @ 28	20 @ 30
HEMP—Undr'd Amer'n pr ton.	1 20 @ 1 50	100 @110
Dressed American, per ton	1 45 @ 1 65	140 @165
TALLOW, per lb.		10 @ 10¾
OIL CAKE, per ton		34 00 @35 00
POTATOES—James, per bbl	2 25 @ 2 37	2 25 @ 2 37
Peach Blow, per bbl	2 75 @ 3 00	2 75 @ 3 00
Carters, per bbl	2 50 @ 2 75	2 50 @ 3 50
Nova Scotias, per bushel	90 @ 95	85 @ 90
Sweet, Del., per bbl	2 75 @ 3 00	@ 5 50
Mercers, per bbl	3 50 @	3 25 @ 3 75
ONIONS—Red, per bbl	@ 1 62	1 25 @ 1 37
White and yellow, per bbl	1 75 @ 2 50	1 75 @ 3 00
CRANBERRIES—Per bbl	5 50 @ 9 00	7 00 @ 9 00
Hickory Nuts, per bu		2 00 @
APPLES—Common, per bbl	2 50 @ 3 00	2 50 @ 3 00
Spitzenburgs, per bbl	3 50 @ 4 50	3 50 @ 4 50
Greenings, per bbl	3 00 @ 3 50	3 00 @ 3 50
TURNIPS—Ruta bagas, per bbl	62 @ 75	50 @
SQUASHES—Marrow, per bbl	2 00 @ 2 50	2 25 @ 2 50
CABBAGES—Per 100	2 50 @ 4 00	2 00 @ 4 00
CELERY—Per dozen	75 @ 1 00	50 @ 75
POULTRY—Fowls, per lb	9 @ 11	7 @ 12
Chickens, per lb	8 @ 12	8 @ 12
Ducks, per lb		12 @ 16
Partridge, per pair	63 @ 75	63 @ 75
Guinea Fowls, per pair		44 @ 50
Turkeys, per lb	10 @ 14	10 @ 14
Geese, per lb	8 @ 11	8 @ 10
PIGS—Roasters	1 25 @ 2 25	1 25 @ 2 50
VENISON—Carcass, per lb	8 @ 10	8 @ 10

Total receipts of the leading Breadstuffs, by railroad, river and coastwise and sales for 27 business days, ending to-day:

	Receipts.	Sales.
Wheat-flour, bbls	325 125	233,190
Wheat, bush	117,562	207,506
Corn	372,385	483,187
Rye	4,050	30,213
Barley	22 500	38,418
Oats	30,150	

RECEIPTS.	Flour.	Wheat.	Corn.	Rye.	Barley.	Oats.
23 bus. days last mon.,	271,541	710,726	131,311	17,266	41,600	109,704
27 bus. days this mon.,	325,125	117,562	372,385	4,050	22,500	30,150

SALES.	Flour.	Wheat.	Corn.	Rye.	Barley.
23 business days last month,	265,534	567,900	287,660	57,760	30,100
27 business days this month.	233,190	207,506	483,189	30,213	38,418

LIVE STOCK MARKETS.—Receipts of Beeves, small, but enough; for 5 weeks, 14,679, viz., week ending Dec. 22, (2,467) ¼c. higher; Dec. 29, (1,672) 1c. higher; Jan. 5, (3,706) 1c. decline; Jan 12 (3,774) ¼c. decline; Jan. 19 (2,940) ¼c. higher. Present price ℔ lb, for estimated dressed weight: Premium Cattle 10¼c.@11c.; First quality 10c.@10¼c.; Medium, 8¼c.@9c.; Poor to poorest 7¼c. @8c. Average of all qualities, 8¼c.@8¼c.

SHEEP AND LAMBS in small supply; receipts in 5 weeks, 39,348, or 10,000 less than previous 5 weeks. Prices of fair animals, 4c.@5c. ℔ lb. live weight.

HOGS.—In abundant supply. Prices, which have ruled low, are now 5c.@5¼c. ℔ lb., live weight, for Corn-fed; 4¼c.@4¼c. for distillery fed.

THE WEATHER, has been remarkably Spring-like, thus far. (See page 40.) No snow worth mentioning, to this date. Fruit and leaf buds are starting so much as to be in danger of freezing out. Our DAILY NOTES, condensed, read: Dec. 24, very mild; 25, cool, rough; 26, light fall of snow; 27, coldest day thus far (10°), 2 inches of snow; 28, cloudy, mild; 29, 30, rain with flurries of snow; 31, cool, squally; Jan. 1 to 4, clear, mild, pleasant; 5, cloudy, rain P. M.; 6, equally, rain and snow; 7, 8, clear, warm; 9, mixed, snow and rain; 10, clear, warm; 11, heavy S. E rain; 12, 13, 14, warm, ground open; 15, 16, heavy rain; 17, clear, cooler, 18 to 22, clear, mild, a little freezing at night; 23, cooler (16°); 24, 25, mild, foggy and slight rain.

☞ *With a single exception, the actual regular circulation of the Agriculturist to subscribers is about* **Fifteen Thousand greater** *than that of any other Journal in the World devoted to Agriculture and Horticulture only.*

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By the column or half column, $30 per column.
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HAIGHT & EMENS, 226 Front-st., New-York.
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" R. H. Haydock, Cashier Market Bank, New-York.

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The undersigned has an extensive nursery upon his grounds at New-Rochelle, for the sale of this plant only. Descriptive circulars containing ample directions for cultivation—with prices of small and wholesale packages will be forwarded gratuitously.
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Lay it upon your table by the side of the Bible—It is a better expounder than many which claim to be expounders.
It is a great labor-saver—it has saved us time enough in one year's use to pay for itself: and that must be deemed good property, which will clear itself once a year. If you have any doubt about the precise meaning of the word *clear*, in the last sentence, look at Webster's thirteen definitions of the v. t."—*Massachusetts Life Boat.*
Published by G. & C. MERRIAM, Springfield, Mass.,—sold by all Booksellers.

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FLUSHING, NEAR NEW-YORK,
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They are of fine size and symmetrical form, and among them will be found
STANDARD APPLES of fine quality,
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Great care is taken in the cultivation of Fruit trees, and none but those of the best quality are allowed to be sent out.

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Catalogue of Seeds for Free Distribution in 1858.

Every person whose subscription to the *American Agriculturist* is paid beyond February, 1858 will be entitled to select three parcels of seeds from the list given below.

☞ SEE REGULATIONS OF DISTRIBUTION BELOW. ☜

FIELD SEEDS.

(These are described in Jan. No. on page 8.)

No. 1—White Sugar Beet.—Our packages of these will contain about 400 seeds, requiring one 3-cent postage stamp.

2—King Philip Corn.—One 3-cent stamp covers about 30 kernels. We shall have packages for one, two or three stamps, whichever any one may choose to pay postage upon. Where seeds go by express. (see note C below), the larger packages will of course be chosen.

3—Stowell's Sweet Corn.—About 40 or more kernels go under one 3-cent stamp. Subscribers may choose a single (one 3-cent stamp), or double (two 3-cent stamps) package.

4—White Poland Oats.—About 300 seeds go under one stamp. Single or double packages are offered.

5—Chinese Sugar Cane.—We shall have plenty of of this. One 3-cent stamp covers about 450 to 500 seeds including envelop; two stamps about 1,600 seeds (1 oz.). Subscribers may choose any amount from one-half to two ounces. ☞If any subscriber selects no other seed, we will furnish him a quarter pound package put up in a muslin bag (postage 27 cents). These packages are of the same size and like those sold at $1 last year.

6—Ashcroft's Swedish Turnips.—Our packages contain 800 to 1,000 seeds each, and will require not over half of a 3-cent stamp. Some other small package may go under thegsame stamp.

7—River's Swedish Stubble Turnip. Same os No. 6.

GARDEN SEEDS.

(Described on page 8.)

8—Dan'l. O'Rourke Pea.—About 65 to 70 peas in a package. One 3-cent stamp required.

9—Champion of England Pea.—55 to 60 in a package, one 3-cent stamp required.

10—British Queen Pea.—Same as No. 9.

11—Haire's Dwarf Blue Mammoth Pea.—About 45 in one package. One 3-cent stamp.

12—Green Kohl Rabi.—500 seeds. One-third of a 3-cent stamp.

13—Enfield Market Cabbage.—500 or more seeds. ½ stamp.

14—Alma Cauliflower.—100 or more seeds. ½ stamp

15—Mammoth Cabbage Lettuce.—400 or more seeds. ½ stamp.

16—Long Orange Carrot.—800 seeds. ½ stamp.

17—Red Strap Leaf Turnip.—800 seeds. ½ stamp.

18—Patience Dock.—100 or more seeds. ½ stamp.

19—Round Spinach.—400 or more seeds. ½ stamp

20—Salsafy (vegetable oyster).—200 or more seeds. ½ stamp.

21—Winter Cherry—½ stamp—number of seeds will depend upon the supply yet to be received.

22—Marrow Squash.—Number yet unknown ½ stamp.

FLOWER SEEDS.

(Described in Jan No. on pages 20 and 21.)

These are put up in small packages of various sizes and amounts, depending upon the rarity of the seeds, the number required for a common flower , &c. One 3-cent stamp will pay the postage on *three* parcels of the flower seeds.

23—Large Flowering Mignonette.
24—Mixed Virginian Stock.
25—Mixed Nesturtiums.
26—Nemophila Insignis.
27—Cockscomb.
28—Dwarf Rocket Larkspur.
29—Mixed Double Balsam.
30—Chinese Pink.
31—Tassel Flower.
32 Portulaca.
33—Cypress Vine.
34—China Asters Mixed.
35—Mixed German Asters.
36—Golden Bartonia.
37—Zinnia Elegans
38—Sweet William.
39—Marvel of Peru.
40—Escholtzia Californica
41—Elegant Clarkia.
42—Fox Glove.
43—Red Lavatera.
44—White Lavatera.
45—Mixed Sweet Peas.
46—Mixed Lupins.
47—Morning Glory.
48—Flos Adonis.
49—Candytuft.
50—Schizanthus.
51—Phlox Drummondii.
52—African Imphee—150 to 200 seeds—½ of stamp.

☞ PLEASE NOTE ESPECIALLY,

A. That the above list contains *fifty-one* distinct varieties of seeds to be distributed, according to individual preferences, among 30,000 to 50,000 persons scattered all over the country, now it will be absolutely impossible to do this without immense labor, and many errors, unless each subscriber take especial pains to facilitate the work, by following the directions below.

B. It is of course understood that, as heretofore, the recipient of the seeds will furnish *envelopes ready stamped and directed*, for mailing them.

C. We found it impracticable to make any arrangement here for sending seeds by Express. By enquiring at the nearest Express Office, the representative of any club of subscribers can ascertain whether it will be cheaper to have their packages come by mail to each individual, or in a package together by Express.

D. If to go by Express, no envelopes will be needed. In that case, simply send us a written list of the names, marking against each name the kinds of seed desired, *using the numbers in the above catalogue.*

Keep a duplicate of the list sent, and give particular directions at the bottom of the list, how the packages are to be forwarded, and to whom directed.

E. If to be sent by *mail*, please prepare the envelop carefully, after the following form:

5	3-cent
16	stamp.
20	3-cent
John Johnson Smith,	stamp.
Hamilton,	
Steuben Co.,	
Ind	

Put the figures corresponding to the Catalogue above, plainly on the left hand of the Envelop, and put all the postage stamps upon the right side of the Envelope, one above the other when two or more are needed, as shown in the diagram. This will prevent the seeds being crushed in the stamping process in the Post Office.

F. Let letters referring to seeds be as brief as possible, and yet plain. All such communications are referred directly to the clerk superintending that department. It is especially desirable that whatever relates to seeds should be on a *separate* slip of paper. (We shall probably distribute over *one hundred thousand packages.* A minute's time saved on each of these would amount to 166 working days, 10 hours each—more than half a year!)

G. Canada, California and Oregon subscribers will need to substitute 10-cent stamps in all cases where 3-cent stamps are named in the catalogue. When two or three send together from Canada, it will usually be cheaper to receive the seeds by Express.

H. Always put the stamps upon the envelops, and not drop them loosely into the enclosing letter.

I. It is always better to send envelops of the ordinary size and made after what is called the "Government pattern"—that is, those in which the back comes under the piece lapping over; these seal up more firmly. This point is not essential, however.

J. Usually, the lighter the envelop the better, that more seeds may go under the same stamps.

K. Send only the number of stamps required for postage on the seed. We have no seeds of any kind to *sell.*

L. Those forwarding *unpaid* envelops will of course not be disappointed if they do not return. We offer seeds *free*, but cannot, in addition, afford to pay postage also.

M. All seeds sent by mail are put up at our country residence, and each package is there mailed *direct*, to avoid its being overhauled at the Distributing Offices.

N ☞ We shall take time to mail all the seeds carefully and regularly. This will occupy the entire months of January, February, and a part of March. Those going to subscribers on the Pacific Coast, and in Southern States where the seasons are earlier, will be mailed first and with dispatch. To others they will go as fast as the putting up and mailing can be accomplished.

Special Premium to Ladies.

To any lady procuring and forwarding SIX subscribers and $5, we will send any fifteen varieties of our flower seeds she may *select.*

To any lady forwarding TEN subscribers, and $8, we will send a package of every kind of flower seeds—Nos. 23 to 51.) The postage on 15 kinds put up together is about 2 cts. and can be sent for 1 ct. on 2 varieties.

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☞ The matter of each number will be prepared mainly with reference to the month of issue and the paper will be promptly and regularly mailed at least one day before the beginning of the month.

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